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# **BLUE BOOK & CATALOG**

**For the Soap, Insecticide, Disinfectant  
and Allied Industries**

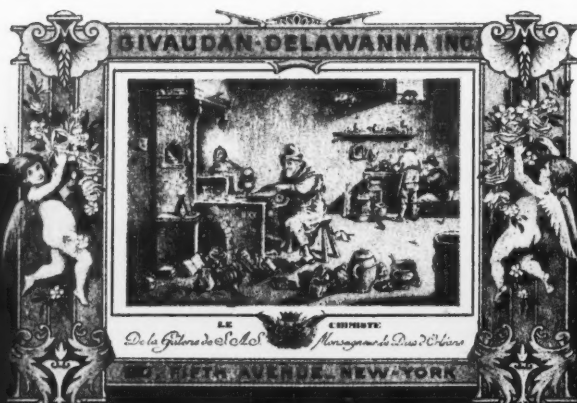
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**1935**

# HEADQUARTERS FOR SOAP PERFUMES

● We supply aromatic products for all requirements. Our laboratory facilities and technical specialists are available to you in any way that they may assist in the solution of your aromatic problems. There is a Givaudan branch office near you (see the list).



Acetophenone  
Aldehydes  
Amyl Benzoate  
Amyl Cinnamic Aldehyde  
Amyl Salicylate  
Aubepine Liquid  
Benzaldehyde F. F. C.  
Benzophenone  
Benzyl Acetate  
Benzylidene Acetone  
Bromistylol  
Cinnamic Alcohol  
Citral S. S.  
Citrene  
Citrene No. 2

Citronellol  
Coumarin  
Cyclamen Aldehyde  
Diphenyl Oxide  
Eugenol  
Geramol (Soap)  
Geranium Synthetic  
No. 1086  
Geranyl Acetate  
Heliotropine  
Irisone Pure  
Isobutyl Benzoate  
Isocugenol  
Laurine (Hydroxycitronellol)

Linalyl Acetates  
Methyl Benzoate  
Methyl Cinnamate  
Methyl Coumarin  
Methyl Heptin Carbonate  
Methyl Ionones  
Moskene  
Musk Ambrette 100%  
Musk Ketone 100%  
Musk Xylol 100%  
Oil Camphor Sassafrassy  
Oil Sassafras Artificial  
Phenyl Acetic Acid  
Safrol  
Terpineol Prime No. 1

## SERIES "A" PERFUMES FOR SOAPS

Six delightful scents — Lilac, Jasmin,  
Bouquet, Rose, Lavender, Cologne.

All the foregoing basic soap perfuming materials of high quality are manufactured at our Plant at Delawanna, N. J. See page 33 for further news of Givaudan Delawanna products, especially spray and disinfectant deodorants.

**G I V A U D A N  
D E L A W A N N A   I N C .**

80 Fifth Avenue   New York, N. Y.

BRANCH OFFICES: Philadelphia, Los Angeles, Atlanta, Cincinnati, Detroit, Dallas, Baltimore, New Orleans, Chicago, San Francisco, Montreal, Havana.

*Say you saw it in the SOAP BLUE BOOK*



# BASIC MATERIALS *for* Soaps & Perfumes

**W**E ARE headquarters for all the important domestic made aromatics of a prime quality used in soaps and perfumes. Included among these are:

Citral	Eugenol
Geraniol	Iso Eugenol
Citronellol	Benzophenone
Benzyl Acetate	Acetophenone
Benzyl Alcohol	Linalyl Acetate

Hydroxycitronellal  
Alpha Amyl Cinnamic Aldehyde  
Phenyl Ethyl Alcohol

**T**HE UNGERER standard of quality for basic aromatic materials has long been recognized by the American perfume and soap manufacturer. We solicit your inquiries for testing samples and quotations.



## UNGERER & CO.

13-15 West 20th Street  
NEW YORK

*Say you saw it in the SOAP BLUE BOOK*



REG. U. S. PAT. OFF.

# FINE CHEMICAL PRODUCTS

*for the soap manufacturer*

**GERANIOL**

**BENZOPHENONE CRYSTALS**

**PURE CITRAL**

**PURE CITRONELLOL**

**RHODIONE AB**

**RHODIONE CRUDE**

**METHYL RHODIONE**

**DIMETHYL HYDROQUINONE**

**TERPINEOL**

**ISO BORNYL ACETATE**

**HYDROXYCITRONELLAL**

**ALSO** the famous SCUR products manufactured by Société  
des Usines Chimiques, Rhône-Poulenc, Paris, France

**AMANDOL, Scur**

**AUBEPINE LIQUID, Scur**

**COUMARIN, Scur**

**LINALOOL EXTRA, Scur**

**LINALYL ACETATE, Scur**

**MUGOL, Scur**

Accurate chemical control assures the  
purity and uniformity of these products

## E. I. DU PONT DE NEMOURS & CO., INC.

ORGANIC CHEMICALS DEPARTMENT

Fine Chemicals Division

WILMINGTON, DELAWARE

61 THOMAS STREET  
NEW YORK CITY

7 SOUTH DEARBORN STREET  
CHICAGO, ILL.







# **BLUE BOOK and CATALOG**

for the Soap, Insecticide, Disinfectant  
and Allied Industries



Seventh Edition  
1935



Catalog Section .....	Page 9
Buyers' Guide Section .....	Page 69
Appendix .....	Page 133

*Published by*

**MAC NAIR - DORLAND COMPANY, INC.**

254 WEST 31ST STREET

NEW YORK

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1935 c.1

## Foreword

**T**HE BLUE BOOK and CATALOG of the Soap, Insecticide, Disinfectant and Allied Industries is intended as a complete buying guide for these industries—not only for manufacturers of these products but also for those who buy them in bulk for resale. It is the purpose of the publishers to provide as complete a buying service as possible, and suggestions will be welcomed from users of the book as to how it may be improved or expanded in scope.

The 1935 edition is divided into three sections. The first, starting on page 9, contains the condensed catalogs of a representative group of supply houses, arranged in alphabetical order for the convenience of users.

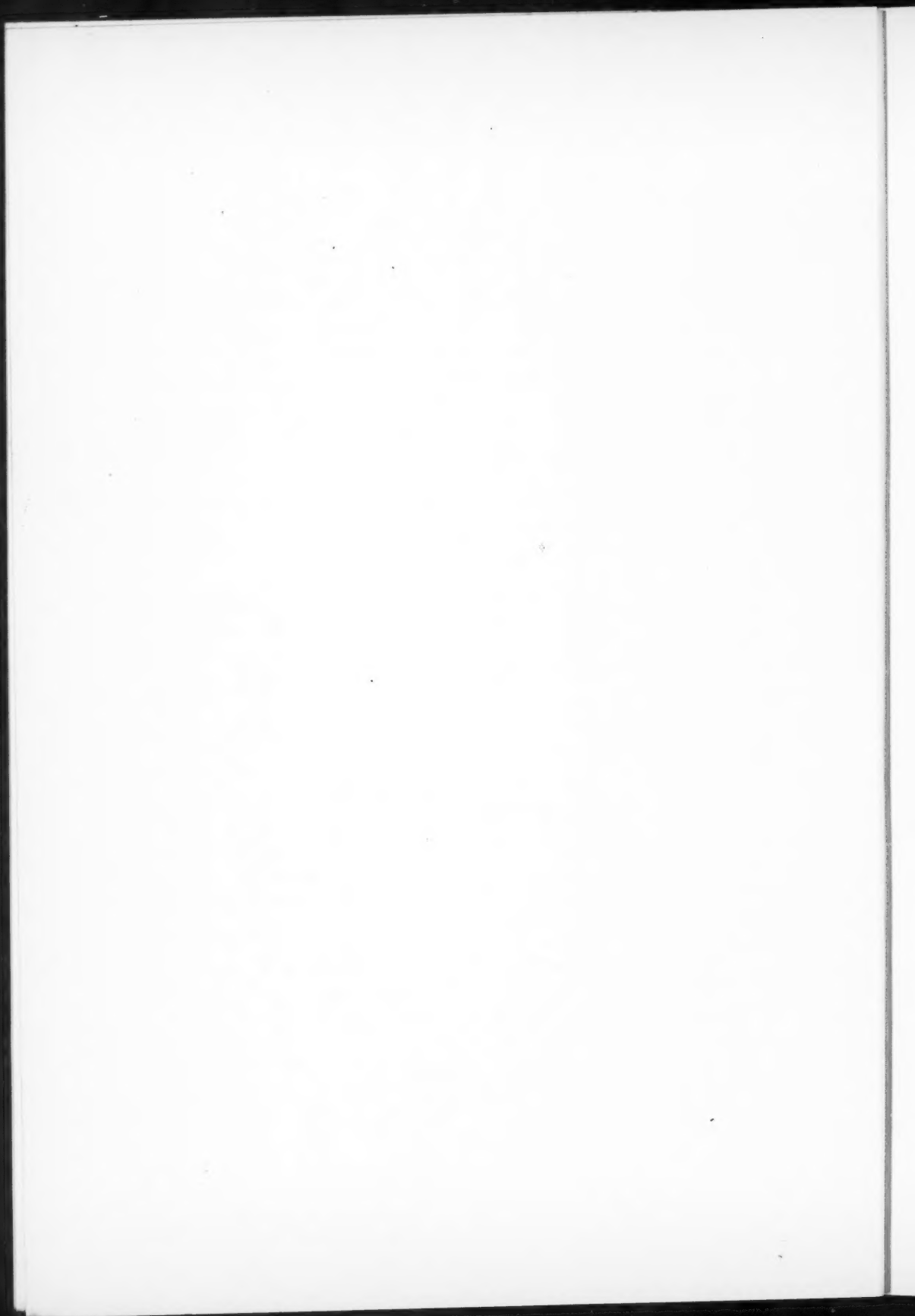
Section two, starting on page 69, gives buyer's guide listings for a complete list of the raw materials, machinery and equipment purchased by manufacturers of soaps and sanitary products. This section also gives sources of supply for bulk and private brand products of all types. These listings are not intended of course as a complete directory of the soap and sanitary products industry, as only those firms are listed which specialize in selling the jobbing trade.

Section three contains a number of reference articles, as well as a review of governmental specifications for the purchase of soaps and sanitary products. Another valuable buying aid for the purchaser of these products is a series of articles by leading manufacturers advising the jobber or bulk buyer what he should look for in and how he should judge various soaps, disinfectants, polishes, etc.

In a work of this type it is unfortunate that errors are unavoidable in the extensive listings. If the name of your firm has been omitted or listed incorrectly, the publishers will greatly appreciate being notified.

THE PUBLISHERS

January, 1935





# Catalog Section



BLUE BOOK and CATALOG  
for the Soap, Insecticide, Disinfectant  
and Allied Industries

*for 1935*



Condensed Catalogs of Firms Supplying  
Raw Materials, Machinery and Equipment  
to Makers of Soaps, Insecticides, Disin-  
fectants and Allied Products.



Factory  
West Haverstraw, N. Y.

Sales Offices  
180 Madison Ave., N. Y. C.

## AROMATIC & SYNTHETIC CHEMICALS

*for Soaps Perfumes, Cosmetics, and Toilet Preparations*

---

### Some of Our Specialties

Geraniol—all types

Citronellol

Acetophenone

Methyl Acetophenone

Benzophenone

Nerolin

Yara-Yara

Benzyl Acetate

Benzyl Alcohol

Amyl Cinnamic Aldehyde

Phenylacetic Acid

Ethyl Phenylacetate

Methyl Phenylacetate

Phenyl Ethyl Alcohol

---

**SODIUM ACETATE ANHYDROUS**

**CRESYLIC ACID**

## American-British Chemical Supplies, Inc.

180 Madison Avenue, New York City

Telephone ASland 4-2265

Cable Address: Bisulphide, New York

Canadian Affiliate: Chas. Tenant & Co. (Canada) Ltd., Toronto

*Say you saw it in the SOAP BLUE BOOK*

## THE INDIANS and HUDSON BAY TRADERS

—washed their blankets with "soap-clay" a peculiar, unctuous mineral found in the Northwest. This mineral is now known as "bentonite" and is produced by us in purified form, called

# VOLCLAY

Its use in detergents and cleaners is growing larger every year.

*It emulsifies oil, greasy soil and bitumens*

*Adsorbs and suspends soil particles*

*Adsorbs carbonaceous soil particularly*

It is also widely used in insecticides as an emulsifying, suspending and spreading medium.



PUREST WYOMING BENTONITE

AMERICAN COLLOID COMPANY  
PRODUCERS OF VOLCLAY

Sales Office: 367 WEST SUPERIOR STREET · CHICAGO

*Say you saw it in the SOAP BLUE BOOK*

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# van Ameringen

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## MANUFACTURERS and IMPORTERS of AROMATIC ESSENTIALS

*which include*

### *Perfume Specialties*

We are makers of finished perfume oils, ready to use in perfume, toilet water, creams, powders, lotions, soaps and all toilet preparations. Many special oils for special purposes, such as insecticides, dentifrices, disinfectants, proprietary preparations, etc. New odors created for specific purposes, upon request.

### *Aromatic Chemicals*

Irines, (Ionones), Geraniols, Citronellol, Amyl Cinnamic Aldehyde, Citral, Benzophenone, Rhodinol, Linalool, Methyl Cinnamate, Phenyl Ethyl Alcohol, Methyl Anthranilate, and many others. Exclusive American agents, Haarmann & Reimer, Holzminden, Germany — manufacturers of aromatic chemicals and perfume specialties.

### *Essential Oils*

Geranium, Citronella, Lavender, Lemongrass, Lemon, Orange, Bergamot, Bois de Rose, Eucalyptus, Sandalwood and many others.

### *Flower Oils*

Concretes, absolutes of Jasmin, Orange, Tuberose, etc., of high quality.

**Say you saw it in the SOAP BLUE BOOK**



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# —Haebler, Inc.

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SOAP PERFUMING demands special abilities and we have the background in that branch. A large number of soap perfumes are now available, ranging in price from \$2.00 up. *State requirements and send for samples.*

van Ameringen-Haebler, Inc.

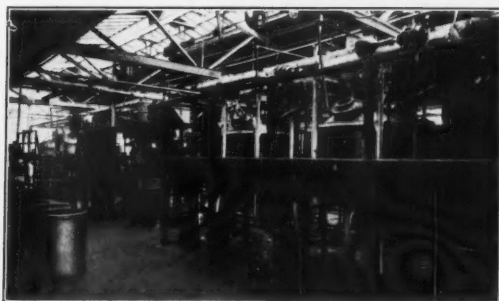
315 FOURTH AVENUE - - NEW YORK

180 North Wacker Drive  
CHICAGO

438 West 48th Street  
LOS ANGELES

42 Wellington Street, East  
TORONTO, CANADA

*View in the  
Reaction Department  
of our factory at  
Elizabeth, N. J.*



*Say you saw it in the SOAP BLUE BOOK*

# If Soap is a problem Armour can help you

**N**O matter what your problem — no matter what kind of soap you need or for what purpose you may wish to use it, Armour and Company are in position to help you.

Over 40 years' experience in making high grade soaps for all needs — strict, efficient laboratory control of raw materials and finished products — a long time reputation for fair dealing and satisfaction — branches in all principal cities (over 350 distributing points) — all this is behind every soap product leaving our plants.

## *Soaps Manufactured by Armour and Company*

Auto Soaps	Oil Soap
Castile Soaps	Scouring Powder
Chip Soaps (flakes)	Scouring Soap
Cocanut Oil Soap	Scrubbing Soap (liquid)
Dry Cleaning Soap	Shampoo Base
Laundry Soap	Shampoo Liquid
Laundry Soap (chips)	Soap Powdered (white neutral)
Laundry Soap (powdered and granulated)	Soap Powders
Liquid Soap Base	Surgical Soaps
Liquid Soap	Textile Soaps
Medicinal Soap (cake)	Toilet Soap Base
Medicinal Soap (liquid)	Toilet Soaps
Mottled Soap	Washing Powder

If you do not find exactly the type of soap you need in the list above, just drop a short note outlining your requirements. Armour and Company maintain a complete and practical Chemical Research Department on call at all times for rendering advice and suggestions. There is no obligation whatever for this service.

INDUSTRIAL SOAP DEPARTMENT  
**ARMOUR AND COMPANY**  
1355 W. 31st STREET • CHICAGO, ILLINOIS

# ***If You Sell—***

**Raw Materials, Machinery, Equipment or Finished Products  
to Manufacturers of Soaps, Disinfectants, Insecticides, etc.,  
You Should File Your Condensed Catalog Annually in the**

## **SOAP BLUE BOOK**

The average supply house publishes a price list or catalog once a year or in some cases every few months, going to considerable expense to place before possible buyers full details on materials, containers or equipment offered. These catalogs fill an important need, but it is obvious that they have limitations. The buyer cannot keep a complete file of the catalogs of several hundred possible suppliers, so most of them eventually find their way to the waste basket.

A far more efficient way of keeping your catalog before the potential buyer is to file it in condensed form, along with those of other supply houses, in a single volume which will be kept in constant use. This method, more efficient for the seller, is also preferred by the buyer because he can secure information by consulting one book rather than fifty. The SOAP BLUE BOOK is kept in constant use. Besides serving as a complete and efficient buyer's guide, it contains other essential information to which the user must constantly refer.

Your catalog will regularly be brought to the attention of potential buyers if it is filed in the SOAP BLUE BOOK.

*Published by*

**McNair Dorland Company**

**254 W. 31st STREET**

**NEW YORK CITY**

*Say you saw it in the SOAP BLUE BOOK*



## Certified Disinfectants

**COAL-TAR** — Unadulterated high quality coal tar disinfectants, uniform, easily diluted and agreeable in odor. Do not deteriorate with age. Can supply any strength in any quantity from a pint can to a tank car. Rigid laboratory control guarantees consumer satisfaction.

**PINE OIL** — Prepared from pure steam-distilled pine oil. Dilute easily to form a good white emulsion which does not separate on standing. Baird's pine oil disinfectants have a germicidal strength three to five times greater than pure carbolic acid.

## PESTOX Liquid Insecticide

An efficient liquid household insecticide of the pyrethrum type, pleasantly scented. Surpasses in effectiveness the standard of the National Association of Insecticide and Disinfectant Manufacturers. Each lot carefully controlled by the Peet-Grady method. Supplied in bulk for distributors to resell under their own trade-names. Also suppliers of pyrethrum concentrate.

**Refined Cresylic Acid**  
**Cresol, U. S. P.**

# BAIRD & McGUIRE, Inc.

HOLBROOK, MASS.



ST. LOUIS, MO.

*New York City and New Jersey Representative*

**Eastern States Supply Co., 127 Troutman St., Brooklyn, N. Y.**

Phone: EVergreen 8-2498

*Say you saw it in the SOAP BLUE BOOK*





## STAINLESS Cattle Spray

A light colored liquid for spraying cattle to rid them of annoying flies and insects. Contains the active principle of pyrethrum. Will not stain, blister or burn, and has no disagreeable odor. A popular product with farmers and dairymen. Supplied in bulk to the distributing trade only.

**Crude Carbolic Acid**  
**Creosote Oils**  
**Mosquito Larvaecide**

## Cresol Compounds

U. S. P.—Prepared in strict accordance with the U. S. P. requirements. Phenol coefficient,  $2\frac{1}{2}$  to 3. Dilutes with water to form clear transparent solutions. Used largely by the medical profession and hospitals.

TECHNICAL — Similar in composition, appearance and odor to Liquor Cresolis Comp., U. S. P., but made from refined cresylic acid as a base. Approximately twice as strong as the U. S. P. product. Clear, amber colored solutions.

# BAIRD & McGUIRE, Inc.

HOLBROOK, MASS.



ST. LOUIS, MO.

*New York City and New Jersey Representative*  
Eastern States Supply Co., 127 Troutman St., Brooklyn, N. Y.  
Phone: EVergreen 8-2498

Say you saw it in the SOAP BLUE BOOK



### CRESOL U. S. P.

Cresol Compound prepared from Barrett Standard Cresol U.S.P. contains less than 5% Phenol and falls well within the limitations of the Federal Caustic Poisons Act.

### META PARA CRESOL

Standard grades have boiling ranges of 3°C. and 6°C. with Meta Cresol content 55% and 52% minimum respectively. Closer boiling fractions supplied as required.

### SPECIAL CRESOLS

Special fractions are supplied to meet users' specifications.

### TAR ACID OILS, 10% — 75%

Carefully blended oils ranging in tar acid content from 10% to 75% for manufacture of disinfectants.

### CRESYLIC ACIDS

Ninety-nine per cent and 95% grades of various distillation ranges depending upon requirements.

### PHENOL U. S. P.

Pure white crystalline products, 39.5°C. and 40°C. minimum melting points.

### HYDROCARBON OIL

A neutral coal-tar oil for high coefficient disinfectants.

### SOLVENT NAPHTHA

Approximately 25°C. boiling range.

### DIP OILS

A coal-tar base for animal dip, for disinfectant purposes.

A small black diamond shape containing a white letter "B".

**THE BARRETT COMPANY**

40 Rector Street, New York, N. Y.

*Say you saw it in the SOAP BLUE BOOK*

*before placing your business on*

# **PYRETHRUM AND DERRIS**

*consider our definition of two important words*

**QUALITY** — Leaving aside exaggerated claims this word has a single meaning in a commercial transaction—that deliveries must be uniform and at least equal to the specifications or understanding on which the merchandise was purchased.

**SERVICE** — Prompt deliveries, straightforward market information, technical assistance and cordial and effective cooperation in the solution of technical and commercial problems.

**W. BENKERT & CO., INC.**

100 GOLD STREET

NEW YORK, N. Y.

*Say you saw it in the* SOAP BLUE BOOK

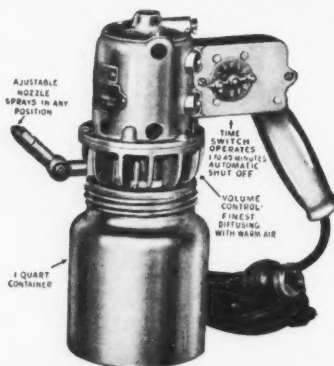
# ANNOUNCING

BREUER'S NEW MODEL 36

## TORNADO ELECTRIC SPRAYER

AUTOMATIC TIME SWITCH — VOLUME AIR CONTROL  
1 GALLON CAPACITY—1/3 H. P. GE UNIVERSAL MOTOR

JUST THE  
SPRAYER YOU  
NEED FOR  
COVERING  
LARGE AREAS

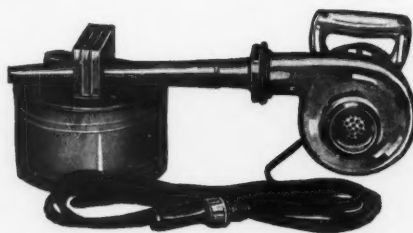


WILL SPRAY BIG  
VOLUME OF  
INSECTICIDE AT  
GREAT DISTANCE  
IN FINE GAS  
FORMATION

Also Complete Line of Tornado Electric Sprayers for Every Insecticide Spraying Problem

### MODEL 54— 1 QT. CAPACITY

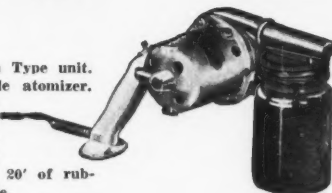
It features an automatic time switch set at any point from 1 to 45 minutes—sprays desired amount without any attention whatever — automatically shuts off. Can also be used for hand spraying. Adjustable nozzle can be set for spraying in any position. Also exclusive volume control adjustment permits spraying one ounce every two to four minutes with either fine or heavy spray. Don't fail to get the facts on this new type sprayer before buying.



MODEL 6—Fan Type unit. Will break insecticide into a very fine mist. Sprays 18' to 20'. 1/3 H. P. G. E. Universal Motor. Norma Ball Bearings. 1 gallon metal container. This model is for larger institutions, warehouses, industrials, etc., and is also highly recommended for moth-proofing solutions. Write today for complete description and circulars.

MODEL 53 — SAME AS MODEL 54 EXCEPT DOES NOT HAVE AUTOMATIC TIME SWITCH OR ADJUSTABLE NOZZLE.

MODEL 50—Fan Type unit. A fine insecticide atomizer. Sprays distance of 8' to 10'. 3/4 H.P. G.E. Universal Motor. 1 pint glass jar. 20' of rubber covered cable.



MODEL 51 — SAME AS MODEL 50 EXCEPT FURNISHED WITH 1 QUART GLASS JAR CONTAINER.

## BREUER ELECTRIC MFG. CO.

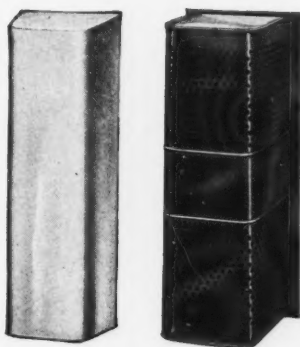
862 BLACKHAWK STREET

CHICAGO, ILL.

See you saw it in the SOAP BLUE BOOK

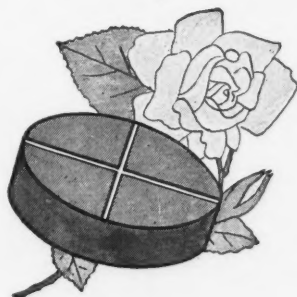
## FRAGRANTAIR BLOCKS ARE COLD MOULDED UNDER 60 TON PRESSURE

This permits a longer life and thoro uniformity. Combined with compatible types of fragrantly pleasant, persistent perfumes, Fragrantaire Blocks will go a long way towards helping increase your sales.



**Blocks** — 4 oz., 24 oz. and 40 oz.

**Containers** — for above sizes as well as round containers to hold 4 and 6 of the 4 ounce cakes. Most styles in oxidized or white.



**Odors** — Rose, Pine, Lilac, Oriental.

**Packing** — Individually in cellophane.

**Prices** — The surprising part is that you do not have to pay more for these than ordinary blocks.



## LIQUID SOAPS

### ARE NO BETTER THAN THE BASES THEY ARE MADE FROM

Clifton assures you of quality, coupled with favorable prices and combined with skill and manufacturing experience covering many years. There is more to base than mere specification. Try Clifton and find out.

Foamwell Liquid Soap

Fleur-de-Lis Liquid Soap

Semi-Castile Liquid Soap

Baby Castile Liquid Soap

40% Liquid Soap

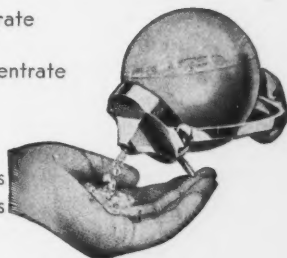
Semi-Castile Concentrate

Olive Oil Concentrate

Coconut Oil Concentrate

Olive Oil Base

(All Liquid Soaps aged in cypress tanks)



### GOOD LIQUID SOAPS

deserve proper dispensing equipment. Clifton Soapers are graceful, long lived and reasonably priced.

Also

Oil Soaps, Floor Cleanser, Rub-No Wax, Metal Polish, Coal-Tar and Pine Disinfectants, etc.

**Attractive Imprint Labels and Circulars.**



# CLIFTON CHEMICAL COMPANY

247 FRONT STREET, NEW YORK, N. Y.

Say you saw it in the SOAP BLUE BOOK



# COLUMBIA



SODA ASH

CAUSTIC SODA

MODIFIED SODAS

CALCIUM CHLORIDE

THE COLUMBIA ALKALI CORPORATION

Executive Sales Offices

EMPIRE STATE BUILDING, NEW YORK

Branch Sales Offices

BARBERTON,  
OHIO

431-451 ST. CLAIR ST.  
CHICAGO

CAREW TOWER  
CINCINNATI

SANTA FÉ TERMINAL BLDG.  
DALLAS

Plant at BARBERTON, OHIO

*Say you saw it in the SOAP BLUE BOOK*



# GOOD USED MACHINERY

## REBUILT - GUARANTEED

EVERY ITEM SHIPPED FROM OUR SHOPS AT NEWARK, N. J.  
IS HONESTLY OVERHAULED AND GUARANTEED

- 2—Proctor and Schwartz Soap Chip Dryers: one with late type 2 roll mill.
- 10—Vertical Crutchers, 3600, 3000, 1500, 1200 lbs. capacity; 1 Laboratory.
- 2—H.A. 3 roll Granite Mills, 12"x24".
- 2—H.A. 4 roll Granite Mills, 18"x24".
- 3—Day 3 roll watercooled Steel Mills.
- 1—H.A. Jumbo Plodder, 8", motor.
- 3—H. A. Plodders, 10".
- 1—Rutchmann twin screw Plodder, 6".
- 5—6-Knife Soap Chippers, 18", 20", 30".
- 1—2 way hand Soap Cutting Table.
- 2—Raymond #0000 Pulverizers.
- 2—12" Mikro Pulverizers, belt and motor.
- 20—Filter Presses, 7"x7" to 42"x42".
- 18—Horizontal Mixers, 20 gal. to 500 gal.; jacketed and unjacketed.
- 14—Dry Powder Mixers, 50 lb. to 10,000 lb.
- 12—Labelers — World, Ermold, National, Knapp, Burt makes.
- 25—Dopp steam jacketed Agitated Kettles, 40, 50, 60, 80, 100, 150, 200 gallons, with ribbon, bridge and double motion agitators.
- 1—Blanchard #9 Crusher.
- 100—Steel and Cast Iron Jacketed and Agitated Kettles, 20 gal. to 5000 gals.
- 4—Ralston and Jones Automatic Soap Presses.
- 4—Soap Foot Presses.
- 3—Day Powder Fillers and Packers.
- 2—4'x9' Cooling Rolls, complete with scrapers.
- 4—24" Kent 4-cage Disintegrators.
- 1—36", 1—42" 4-cage Disintegrators, made by Holmes and Blanchard, Boston, Mass., for fine pulverization. Used widely for soap powder and powdered soap. No screens no plugging.

SEND FOR LATEST SOAP BULLETIN

ASK US FOR ITEMS NOT LISTED

MISCELLANEOUS—Storage and Mixing Tanks, Paste Mixers, Pony Mixers, Liquid and Powder Fillers, Carton Sealers, Pressure and Gravity Filters, Shaving Tube Fillers and Closers, Wrapping Machines, Pulverizing Machines, Rotary Pumps, Slabbers, Boilers, Compressors, etc.

Visit our Shops and Yards at 335 Doremus Avenue, Newark, N. J.  
(Market 3-0600)

## CONSOLIDATED PRODUCTS COMPANY, Inc.

19-21 Park Row, N. Y. C.  
Tel. Barclay 7-0600



Cable Address:  
Equipment N Y

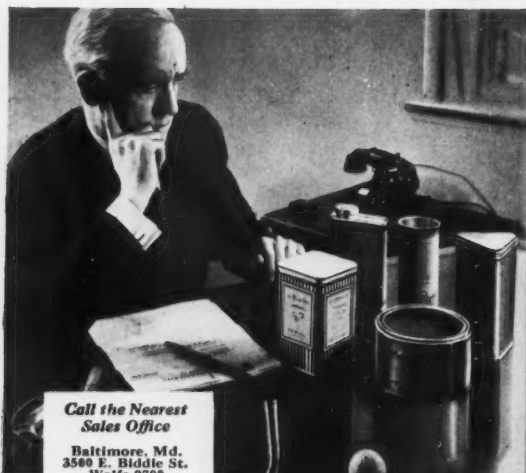
*We Pay Cash for Your Idle Equipment. Send us your list.*

Say you saw it in the SOAP BLUE BOOK



# WHEN YOUR *Problem* is PACKAGING

## *Call* CONTINENTAL



### Call the Nearest Sales Office

Baltimore, Md.  
3509 E. Biddle St.  
Wolfe 9700

Boston, Mass.  
131 State St.  
Hubbard 7172

Chicago, Ill.  
4622 W. North Ave.  
Spaulding 8480

Cincinnati, Ohio  
2510 Highland Ave.  
Jefferson 2201

Denver, Colo.  
3333 Blake St.  
Tabor 4261

Detroit, Mich.  
1900 E. Jefferson Ave.  
Fitzroy 3292

Houston, Texas  
105 N. Greenwood St.  
Wayside 4163

Jacksonville, Fla.  
1801 W. 15th St.  
Jacksonville 5-1355

Kansas City, Mo.  
Guinotte & Lydia  
Aves.  
Victor 7250

Los Angeles, Calif.  
3920 Union Pacific  
Ave.  
Angelus 7111

Memphis, Tenn.  
265 W. Trigg Ave.  
Memphis 3-4622

New Orleans, La.  
521 N. Scott St.  
Galvez 4145

New York City, N. Y.  
100 E. 42nd St.  
Ashland 4-2300

Omaha, Neb.  
8th and Dodge Sts.  
Omaha 1387

Philadelphia, Pa.  
Room 1109  
1500 Walnut St.  
Pennypacker 1865

St. Louis, Mo.  
P. O. Box 1242  
Bridge 3550

San Francisco, Calif.  
155 Montgomery St.  
Garfield 7890

Syracuse, N. Y.  
1016 E. Water St.  
Syracuse 2-2341

Warwood,  
Wheeling, W. Va.  
Hazlett Ave. & 8th St.  
Warwood 760



CONTINENTAL'S representatives, skilled in "packaging to sell," offer the knowledge and experience gained through years of solving the packaging problems of many diversified industries.

Coupled with their wide knowledge are Continental's large resources—41 plants strategically located from Coast to Coast . . . sales offices in principal cities . . . completely equipped Research and Development Laboratories . . . skilled Design Departments . . . and batteries of modern lithograph equipment, manned by craftsmen and aided by superior printing plates made in Continental's own master engraving plants.

A Continental representative near you, gives you ready access to the extensive packaging facilities of the entire Continental organization. Feel free to call on him for help at any time.



## CONTINENTAL CAN COMPANY

NEW YORK

CHICAGO

SAN FRANCISCO



**ALL DAVIES-YOUNG SOAPS  
ARE MADE UNDER  
LABORATORY  
CONTROL**

**We make a specialty of these  
PRODUCTS**

LIQUID SHAMPOO  
SHAMPOO BASE SOAP  
SHAMPOO PASTE  
LIQUID TOILET SOAPS  
LIQUID SOAP BASES

---

**SURGICAL GREEN SOAPS**

---

**OIL SOAPS  
LIQUID SCRUBBING SOAPS**

---

**"BEAMAX" Dries to a Lustre LIQUID WAX  
"BUCKEYE" LIQUID WAX  
"BUCKEYE" AQUAWAX**

In addition to these products, we produce many others—all under laboratory control.

An exacting chemical analysis insures **UNIFORMITY**—in **SOAP CONTENT** and **QUALITY**.

We will gladly send samples and prices.

**SOLD  
THROUGH JOBBERS  
EXCLUSIVELY**

**THE DAVIES-YOUNG SOAP COMPANY  
DAYTON - OHIO**

# "SERRID" PRODUCTS

## POWDERED DERRIS ROOT

For agricultural dusts, especially valuable where poisonous compounds are not permitted. Leaves no harmful residue. A timely product, tested, proven and used extensively this season with excellent results. Sold on a standardized rotenone basis. Air-floated. This product is equally effective in household powders.

## CONCENTRATED LIQUID EXTRACT

For private formulae for agricultural and horticultural sprays. Standardized content in various solvents.

## ROTENONE—70%, 90% AND C. P.

The chief toxic element of Derris Root. Fine whitish crystals, for moth-proofing, colorless sprays and technical work.

## DOUBLE X CONCENTRATE

A combination Rotenone-Pyrethrum oil concentrate that will stay in solution. A decided improvement in the spray field. Sold on a kill basis as high as 85%. With this base manufacturers may improve their product and lower their costs. Especially good for cattle spray.

## SUPER AGRICULTURAL SPRAY

A finished concentrated liquid plant spray furnished to the trade in bulk for repackaging. Contains the wetting agents necessary. Tested and proven for us by prominent entomologists.

## DERRIS ROOT RESINATE

The dried extractives of Derris Root, containing 25% Rotenone, 75% other Derris resins. For private formulae, agricultural sprays, soaps, etc.

Headquarters for



Derris Products

# DERRIS INC.

79 WALL ST. NEW YORK CITY

*Say you saw it in the SOAP BLUE BOOK*

# PARADOW ★ ★ ★

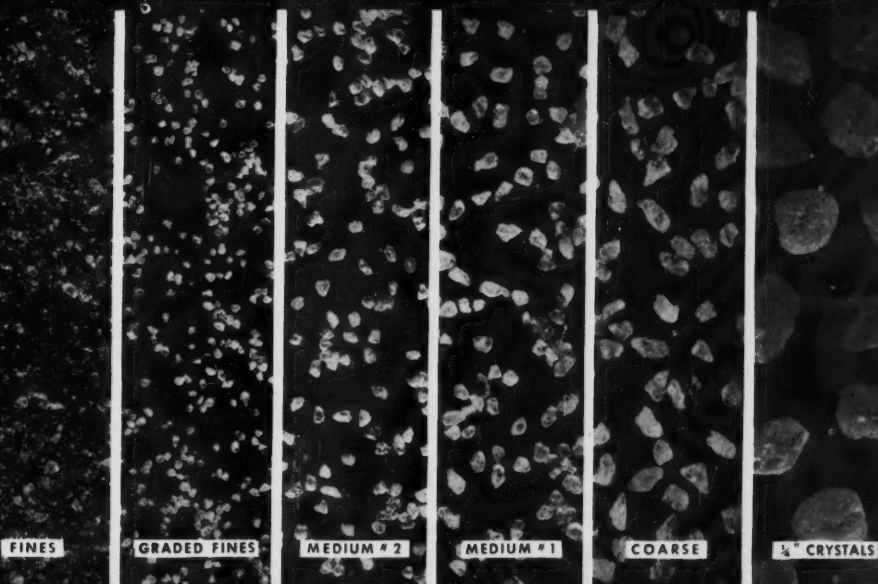
## PURE PARADICHLORBENZENE

Six sizes of crystals, snow-white, pure and transparent, all uniform in size, will make it possible for you to select the size and form of Paradichlorobenzene that fits your requirement. Each form of crystal is designed to meet specific trade needs, whether it is to be processed or repackaged in its original form and sold as a moth killer, a deodorant, or for other purposes.

We offer the six sizes:  $\frac{1}{4}$ " crystal, Coarse, Medium No. 1, Medium No. 2, Graded Fines, and Fines, and in addition are in position to produce special size crystals if desired. All sizes possess marked free-flowing properties.

We invite your inquiry. Let us quote on your requirements of Paradow, Pure Paradichlorobenzene of highest grade.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN



## OTHER DOW PRODUCTS

COUMARIN • METHYL SALICYLATE • METHYL ANTHANILATE • PHENOL  
 DOWICIDES (Disinfectants) • CAUSTIC SODA • CARBON TETRACHLORIDE  
 ETHYLENE DICHLORIDE • PROPYLENE DICHLORIDE  
 ORTHODICHLORBENZENE, and over 200 others



# Increase Your Orders In 1935

.. with dependable Falcon products



**T**O the aggressive jobber who plans an increase in 1935 business Falcon says, "Here's a line that has long been recognized by customers for its uniformly high quality and absolute dependability. Here's a line that is made under strictest scientific control. Here's a line that in 1934 was handled by more jobbers than in any previous year."

Start your 1935 business off right with Falcon products and make orders come easier. Because with Falcon, you not only meet all competition, but you supply your customers with a better and more dependable product for every sanitation need.

We've a descriptive price list for you. Send for it.

**EAGLE SOAP CORPORATION**  
HUNTINGTON INDIANA

## DEODORANTS

Falcon Blocs  
Falcon Blackettes  
Falcon Crystals

## LIQUID TOILET SOAPS

Falcon 40% Concentrated  
Falcon 18% Toilet Grade  
Falcon 18% Mechanics Grade  
Falcon Coconut Oil Shampoo

## FLOOR CLEANSERS

Falcon Economy Scrub Soaps  
Falcon Liquid Terrazzo Soap  
Falcon Liquid Linseed Soap  
Vegetable Oil Jelly Soaps  
Falcon Cleaning Crystals

## FLOOR DRESSINGS

Falcon Non-Buffering Wax  
Falcon Liquid Floor Wax  
Falcon Floor Varnish  
Falcon Floor Seal

## INSECTICIDES

Falcon Bed Bug Killers  
Falcon Moth Killer  
Falcon Fly Killers  
Falcon Roach Powder  
Falcon Warehouse  
& Mill Insecticide

## DISINFECTANTS

Falcon Pine Disinfectant  
Falcon Formaldehyde Sprays  
Falcon Colloidal Disinfectant

## PLUMBING CLEANSERS

Falcon Drain Opener  
Falcon Powdered Bowl Cleaner  
Falcon Porcelain Cleaner



# FALCON SANITATION PRODUCTS



# FEDERAL

## Preservatives and Polishes

### *for Every Type of Surface*

Federal Floor Preservatives and Polishes are highly perfected products. They are the result of constant research, both in the laboratory and in practical usage. Our entire technical staff has concentrated on the development of these finishes. They are specialized products made by America's largest manufacturer of Preservatives and Polishes selling in bulk.

In this list will be found the entire Federal Line with a quality product for every purpose and every surface.

#### NO-BURN GYM FINISH

An extremely hard, durable finish that will not rubber-burn on gymnasium floors and also one with such remarkable durability it can be used on all types of interior or exterior surfaces including dance floors, school furniture, desks, seats, etc. Applied with a lamb's-wool mop, applicator or cheesecloth pad.

#### G. F. B. No. 2

This is No-Burn Gym Finish except made in a standard body for brush application.

#### G. F. B. No. 3

Is the same remarkably durable finish as No-Burn Gym Finish but intended for use only on surfaces where a hand rubbed finish is desired.

#### G. F. B. CONCENTRATED BASE COLORS

Highly perfected concentrated color bases for use with No-Burn Gym Finish to impart colors as well as extreme durability on wood, concrete and cement surfaces. Made in Light Oak, Dark Oak, Light Gray, Dark Gray, Walnut, Maroon, Green.

#### G. F. B. CONCENT'D ALUMINUM BASE COLOR

A perfected concentrated aluminum base color for all types of metal work such as tanks, bridges, pipes etc., on both inside and outside surfaces.

#### MOP-VAR

A specialized product to be applied with a mop or other applicator. Reduces maintenance and application costs. For wood, concrete, hard mastic or magnesite, cork and cork tile.

#### LIGHTNING LUSTRE

A no-rub, no-polish wax for rubber tile, soft composition, linoleum, and as a maintenance finish for practically any surface.

#### VAR-LIN

A preservative and polish combining the hardest waxes of best quality, varnish gums and quick drying solvents. Very durable and practically eliminates the slipping hazard. Polishes to a beautiful, glossy film.

#### LIQUID OIL BASE WAX

A wax of the oil base type. Applied with a mop or applicator. Buffs and polishes beautifully. A superior product of its type.

Our laboratories are constantly developing new products and perfecting new methods and treatments for beautifying and preserving all floor surfaces.

Write for complete information, testing samples and prices.

## FEDERAL VARNISH COMPANY

337 SO. PEORIA STREET

CHICAGO, ILL.

#### TERRAZZO SEALER

The perfect sealer for terrazzo and marble floors. Reduces cost of maintenance. Prevents penetration of dirt.

#### CHAIN STORE SEALER

This is a highly specialized finish for wood floors to meet peculiar conditions and requirements of large organizations operating chain units. Applied by spraying or large lamb's-wool applicator. Forms a hard, durable finish that will not stain merchandise accidentally dropped on it.

#### RUBBER LACQUER

A superior lacquer developed particularly for use on rubber and rubber tile. Dries rapidly, easily applied and very durable. Will not discolor light shades.

#### LINOLEUM LACQUER

Specially made for printed, lacquer finished inlaid linoleum and congoium or Seallex types of linoleum. Dries in 30 minutes, easy to apply and will not cause light, delicate shades to fade or discolor.

#### GYM FINISH CLEANER AND POLISH

Specially developed for the cleaning of gymnasium floors, hand ball and basket ball courts, etc. Cleans perfectly rubber shoe marks and other soiling elements.

#### BUFFING WATER WAX

A water wax type of finish developed by our chemists but unlike the self-polishing water waxes requires buffing to bring out the beauty of finish. Very popular wherever this type of wax is used.

#### LINOLEUM, RUBBER & TERRAZZO CLEANER

Meets perfectly all requirements for a superior cleaner for these surfaces. Keeps the surface always in proper condition and prevents deterioration.

#### GYM FINISH MARKING ENAMELS

Another Federal specialized product made for the purpose of marking hand ball courts, basket ball floors, running lanes, etc. Has the remarkable wearing quality of Gym Finish and possesses great covering and hiding power. Made in White, Red, Black.

#### STREET MARKING OR TRAFFIC PAINT

A rapid drying paint for marking traffic lanes, parking spaces and similar uses. For both inside and outside use. Dries for traffic use in 30 minutes. Has remarkable wearing quality necessary for a product of this kind.

*Say you saw it in the SOAP BLUE BOOK*

# FELTON PRODUCTS

For Soap, Disinfectant, and Insecticide Manufacturers

## AROMATIC CHEMICALS

We produce a comprehensive line of aromatic chemicals at our Brooklyn factory. Of special interest to soap makers are

AMYL CINNAMIC ALDEHYDE	ISO BUTYL BENZOATE
AMYL BENZOATE	ISO EUGENOL
BENZYLIDENE ACETONE	LINALOOL
CITRAL	LINALYL ACETATE
EUGENOL	METHYL PARA CRESOL
GERANIOLS	PARA CRESOL ACETATE
GERANYL ACETATE	RHODINOL

## SOAP PERFUMES

A complete range of tested soap odors, floral notes, bouquets and heavy oriental odors. **Will not discolor.** Of more than usual importance is our new line of soap odors uniformly priced at **One dollar a pound**, full strength and high coverage.

## INSECTICIDE SPRAY ODORS

KEREX LORIENT  
KEREX CHERIE  
AIRDOUX  
DULCENE

To cover the odor of kerosene and impart a delightful scent to your spray at a cost of **less than three cents a gallon.**

VITAFLO—To neutralize the odor of kerosene and leave a fresh, clean scent. Also excellent (Trade Mark Ptd.) for floor waxes, polishes and spot removers.

CARBAROMES—For cresylic and carbolic acid sprays.

## DEODORANT BLOCK ODORS

COLOROMES—Combined perfume and color which will perfume and color your blocks or crystals in one simple operation. Available in a complete assortment of odors and colors. Perfume also supplied without color.

## WATER SOLUBLE PERFUMES

AQUAROMES—Completely water soluble perfume oils. For use in theatre sprays, liquid soaps, shampoos, etc.

FORMAROMES—For use in formaldehyde sprays.

SAMPLES AND QUOTATIONS FURNISHED ON REQUEST.

## FELTON CHEMICAL COMPANY, Inc.

603 JOHNSON AVENUE, BROOKLYN, N. Y.

Aromatic Chemicals — Natural Isolates — Perfume Oils — Artificial Flower & Flavor Oils

Stocks carried in following cities:

Chicago, Ill.

1200 N. Ashland Ave. ROBERT E. FELTON  
Balter Bldg.

New Orleans, La.

St. Louis, Mo.

KIEFER SALES  
& ADV. SERVICE  
245 Union Blvd.

A COMPLETE SERVICE  
FOR THE WEST

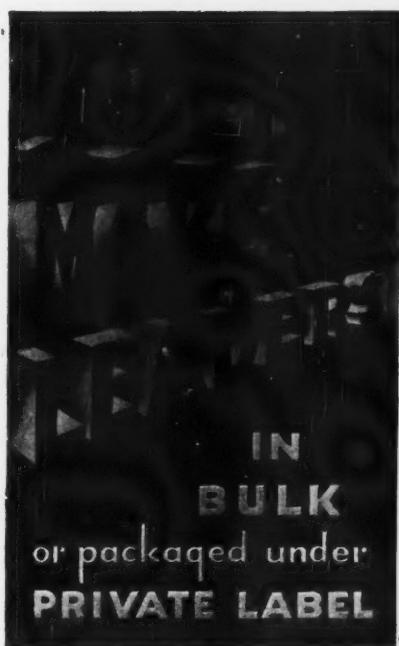
FELTON CHEMICAL CO.  
INC.

515 So. Fairfax Ave.  
Los Angeles, Calif.

Say you saw it in the SOAP BLUE BOOK



# Sanitary Chemicals



## FULD BROS. INC.

2310 FREDERICK AVE.  
BALTIMORE, MARYLAND

### LIQUID CLEANERS

Pine Scrub Soap  
Sassafras Scrub Soap  
Floor Bleach  
Rug Shampoo

### OIL and SOFT SOAP

All Percentage Oil Soaps  
Jelly Soaps

### LIQUID and BASE SOAPS

Liquid Hand Soaps  
(All percentages 10 to 40%)  
Shampoos  
Coconut Oil Base Soaps

### DISINFECTANTS

Pine Oil  
Coal Tar  
Chesol Compounds  
Chlorine

### INSECTICIDES

Roach Powders  
Fly Sprays  
Cattle Sprays  
Pyrethrum Sprays  
Moth Spray  
Sprays for Special Purpose

### FLOOR WAXES and SEALS

Self-Polishing Wax  
Liquid Wax  
Wood Seal  
Gym Seal  
Terrazzo Seal  
Wax Var.  
Paste Wax  
Dance Floor Wax

### POLISHES

Count 1234567  
Metal Polishes  
(Liquid, Paste & Powdered)  
Auto Polish  
Furniture Cream  
Furniture Polish  
Floor Oil

### PLUMBING SPECIALTIES

Drain Pipe Cleaners  
Liquid & Powdered Bq.  
Cleaners  
Tile & Enamel Cleaners  
Boiler Compounds

### CLEANING COMPOUNDS

Washing Compounds  
Window Cleaner  
Scouring Compounds  
Fabric Cleaners

### LIQUID DEODORANTS

Chlorox  
Formal Chloro Sprays  
Theatre Sprays  
Pine Deodorant  
Drip Machine Fluid

### DEODORANT BLOCKS and CRYSTALS

Urinal Blocks  
Deodorant Blocks  
2 to 40 oz. sizes  
Deodorant Crystals

### CONTAINERS

Urinal Strainers  
Wall Containers  
Soap Dispensers

# **SODIUM**

# **FLUORIDE**

**(NILE BLUE)**

The standardization of Sodium Fluoride Colored Official Nile Blue has effectively done away with hazard to the public. No one will mistake the blue tinted powder for a food ingredient . . . Its potency as an exterminating agent maintains it as the dominant insecticide for the commercial and household destruction of insect pests . . . This General Chemical Company product excels in free-flowing quality and fluffiness.

# **TRISODIUM**

# **PHOSPHATE**

The Standard Purity of this, as of all other General Chemical Company products, is a matter of common knowledge. The practical advantage of the Company's standard of packaging assures the customer's receipt of his material in its original condition.



*The Company's Products  
include also:*

**SODIUM SILICATE**  
**ACETIC ACID**

*and other Heavy Chemicals  
of Standard Purity*

**GENERAL CHEMICAL COMPANY**

40 RECTOR STREET, NEW YORK, N. Y.

Cable Address: LYCURGUS, N. Y.

Sales Offices: Buffalo, Chicago, Cleveland, Denver, Los Angeles, Philadelphia, Pittsburgh, Providence, San Francisco, St. Louis

# HEADQUARTERS

## FOR SPRAY AND DISINFECTANT REODORANTS



We have developed and offer you a number of excellent perfuming and reodorizing oils for fly sprays, paradichlorobenzene and naphthalene blocks, cleaning compounds and polishes. These cover all price requirements.

The following are a few which have met with marked success:

**CITRENE**—Use CITRENE instead of Citronella in your soap, cleaners, and polishes. Stronger, pleasanter, cheaper.

**FLORENE**—Sharp, clean, refreshing scent that covers kerosene odor. Excellent for fly sprays and insecticides.

**KERODOR No. 1**—A very inexpensive deodorant, for neutralizing the kerosene odor in insecticides. Kerodor is **EFFECTIVE** . . . it gives sprays the advantage of a pleasant odor.

**KERODOR No. 2**—Just recently added to our "Kerodor" series. Successfully overcomes the kerosene smell, and adds a pleasant, flowery scent to the product.

**ODRENE**—Powerful, low price oil

for use alone or in combination in sprays, in polishes.

**LAVENE**—Especially good as a deodorant in polishes. Also effectively covers kerosene odor in fly sprays.

**LILAC SPRAY OIL B-3223-2**—Especially blended to overcome the unpleasant odor of kerosene insect sprays.

**NEW MOWN HAY OIL B-3470**—This type of odor is one of the most popular in sprays. B-3470 is especially effective in overcoming the kerosene smell.

**PARATINTS**—Paratints color and perfume pardichlorobenzene blocks, bath salts, or moth balls in one operation. And they do it better . . . because of uniform penetration of the crystals . . . more effective perfuming oils.

*See inside of the front cover for information on Givaudan soap perfumes and other products.*

BRANCHES  
Philadelphia, Los Angeles,  
Atlanta, Cincinnati, Detroit, Dallas,

**GIVAUDAN  
DELAWANNA INC.**

80 Fifth Avenue New York, N. Y.

*Say you saw it in the SOAP BLUE BOOK*

BRANCHES  
Baltimore, New Orleans,  
Chicago, San Francisco,  
Montreal, Havana.

## **“GOOD” PRODUCTS- at “GOOD” PRICES**

Sixty-six years of experience in the manufacturing chemical field insure our ability to supply products of consistent high quality and definitely standardized as to purity and strength. All Good products are priced at levels which enable the jobber to compete on volume business. Ask for a copy of our current price list.

### **Disinfectants**

Keystone Antiseptic Disinfectant  
Keystone Liquor Cresolis, U. S. P.  
Keystone Liquor Cresolis, Tech.  
Keystone Pine Oil Disinfectant No. 40  
Keystone Pine Oil Disinfectant No. 100

Zaxol Disinfectant

Chlorozone Disinfectant

### **Insecticides**

Keystone Fly Spray  
Keystone Fish Oil Spray Soaps  
Keystone Nicotine Sulphate 40%  
Keystone Bed Bug Killer  
Keystone Insect Killer (Powder)

### **Waxes and Polishes**

Keystone Self-Polishing Wax  
Keystone Glosster (Liquid Wax) Hygienic  
Keystone Glosster (Paste Wax) Hygienic  
Keystone Cream Furniture Polish  
Keystone Lemon Oil Polish  
Keystone Cedar Oil Polish  
Keystone Non-Inflammable Metal Polish  
Keystone Floor Oil  
Keystone Floor Dressing

### **Soaps**

Keystone Liquid Soaps  
Keystone Vegetable Oil Soap  
Keystone Pine Cleaner Soap  
Keystone Surgical Soap, U. S. P.  
Keystone Coconut Oil Soap Base  
Keystone Fish Oil Soaps  
Keystone Scouring Soap, Fine  
Keystone Scouring Soap, Coarse  
Keystone Saddle Soap

### **Cleaners**

Keystone Wax Base Cleaner  
Keystone Crystal Cleaner  
Keystone Drain Pipe Solvent

### **Chemicals**

Naphthalene, Ball and Crystals  
Carbon Tetrachloride  
Trisodium Phosphate

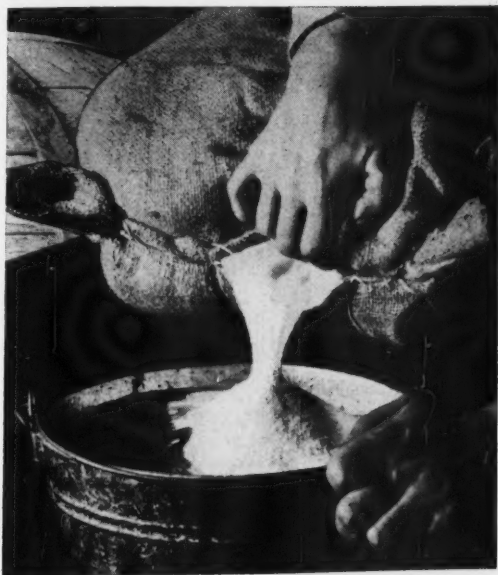
# **JAMES GOOD, INC.**

Kensington

Philadelphia



*Say you saw it in the SOAP BLUE BOOK*



# GRASSELLI TRI-SODIUM PHOSPHATE

*Free  
Flowing*

**A**S OUR process permits Grasse-  
selli T. S. P. to *cure*, it is  
Free Flowing.

### *Non-Sifting Packages*

Shipped to you in barrels with  
paper liner — no loss either in  
transit or storage. Also comes in  
kegs and bags. Grades — fines,  
globular, medium and coarse.

### *Grasselli Service*

The 20 Grasselli branches and

warehouses offer you — (1) More  
convenient proximity. (2) Quick-  
er delivery. (3) Economy of  
freight rate. (4) Larger stocks,  
hence complete shipments. (5)  
Quality backed by a chemical  
reputation of 95 years.

Try Grasselli on your next order  
for T. S. P. Just write, wire or  
phone our nearest branch below.

*Let us also quote you on —*

Silicate of Soda  
Caustic Soda  
Soda Ash

Carbon Tetrachloride  
Paradichlorobenzene  
Sodium Fluoride

**THE GRASSELLI CHEMICAL COMPANY**  
CLEVELAND OHIO  
INCORPORATED

New York Office and Export Office: 350 Fifth Avenue

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Milwaukee	New Haven	New Orleans	Philadelphia	Pittsburgh	St. Louis	St. Paul

SAN FRANCISCO—584 Mission St.

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Represented in Canada by Canadian Industries, Ltd., Acids and General Chemicals Division, Montreal and Toronto



WRITE FOR  
• FOLDER •

**GRASSELLI GRADE**  
*A Standard Held High for 95 Years*

# HOOKER PRODUCTS

CAUSTIC SODA LIQUID CHLORINE

BLEACHING POWDER MURIATIC ACID

MONOCHLORBENZENE ORTHO-DICHLOR-

BENZENE PARA-DICHLORBENZENE

TRICHLORBENZENE TETRACHLORBENZENE

HEXACHLORBENZENE SODIUM BENZOATE

AMMONIUM BENZOATE BENZOIC ACID

BENZOIC ANHYDRIDE BENZOYL CHLORIDE

PARA-NITROBENZOYL CHLORIDE

BENZYL CHLORIDE BENZYL ALCOHOL

BENZOTRICHLORIDE CHLORTOLUENE

ALUMINUM CHLORIDE ANHYDROUS

ANTIMONY TRICHLORIDE ANHYDROUS

ARSENIC TRICHLORIDE ANHYDROUS

TIN TETRACHLORIDE ANHYDROUS

FERRIC CHLORIDE SOLUTION

FERROUS CHLORIDE SOLUTION

SULFUR MONOCHLORIDE

SULFUR DICHLORIDE

SULFURYL CHLORIDE

THIONYL CHLORIDE

ACETYL CHLORIDE

PROPIONYL CHLORIDE

ALPHA-CHLOR-

NAPHTHALENE

SPECIAL SALT

HYDROGEN

## "PARADI"

REG. TRADE MARK

HOOKER PARADICHLOR-  
BENZENE IS SPECIALLY  
PREPARED FOR USE IN  
THE MANUFACTURE OF  
MOTH PREVENTIVES AND  
DEODORANTS AND IS  
OFFERED IN SIX STANDARD  
CRYSTAL SIZES.  
READY FOR IMMEDIATE  
SHIPMENT IN 200 AND 100  
POUND BARRELS AND 50 AND  
25 POUND KEGS.



OPPORTUNITIES TO QUOTE WELCOMED

## CAUSTIC SODA . . .

IMMEDIATE DELIVERY  
OF SOLID AND FLAKE  
CAUSTIC SODA IN STEEL  
DRUMS, LIQUID IN DRUMS OR  
TANK CARS, GROUND AND  
POWDERED IN STEEL DRUMS  
OR HEAVY WOODEN BARRELS.  
HOOKER SERVICE MEN,  
CHEMISTS AND ENGINEERS  
GLADLY ASSIST CONSUMERS  
FREELY ON EQUIPMENT DESIGN  
AND USE OF THIS PRODUCT.

## HOOKER ELECTROCHEMICAL COMPANY

EASTERN

PLANT—NIAGARA FALLS, N. Y.  
SALES OFFICE: 60 E. 42ND ST., NEW YORK

WESTERN

PLANT—TACOMA, WASH.  
SALES OFFICE: TACOMA, WASH.





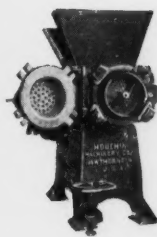




# Houchin Machinery Co.

Hawthorne, N. J.

## Soap Machinery



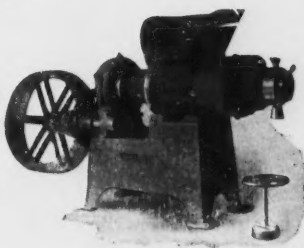
### Combination Plodder

With this machine toilet soap can be produced without the use of mills. Our "F" Size machine is ideal for making Sample Cakes.

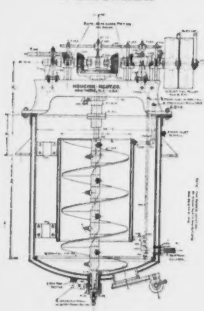
### Standard Jumbo Plodder

This machine is used in most soap factories.

It is used also in our mill-less method.



### Perfection



Our Perfection machine is standard with the majority of soap makers.

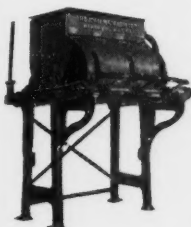
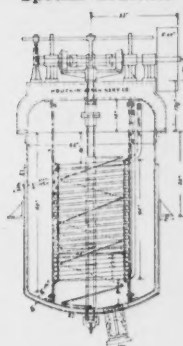
It is the best machine for making cold made — half boiled and floating soaps. Made in several sizes.

### Crutchers

Our special machine is ideal for making shaving soaps.

Kettle made of nickel clad steel, coil and blades of monel metal. Also has our plug type valve. Made in several sizes.

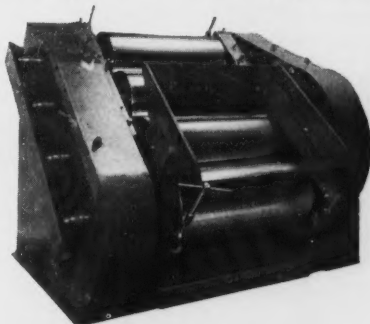
### Special Crutcher



### Ideal Amalgamator

This machine has lately been improved with a new locking device operated by chains on each end. It has been so designed that the soap can be emptied into hopper of mill or plodder. Lately we have made several machines using nickel clad steel for the kettle, monel metal for the blades.

This cut represents our latest Type F Mill. Rolls are 18" dia. 40" long, water cooled. Frames are very heavy, bearings very large. Gears run in oil. Gears and bearings are entirely covered, all mounted on a heavy cast iron base.

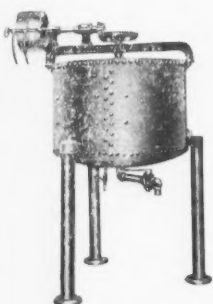


Say you saw it in the SOAP BLUE BOOK

# HUBER MACHINERY

***"Built To Last"***

With over forty years experience and a pride in producing good work, we feel certain of satisfying any critical demand. Wax crayon and candle machines are also part of our manufactured products.

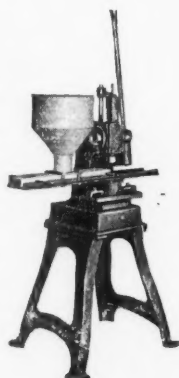


## For Liquid Soap

Mixing machines of exceptional merit for base or percentage production and manifold other uses.

## Para Block Press

A powerful press with all working parts steel to withstand pounding and abuse. Excellent and rapid production.

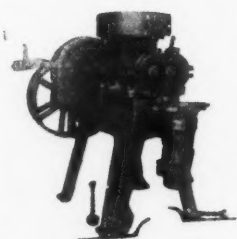


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For Para Crystals, colors and perfumes. Cleaners, bath salts, roach powders, fertilizers, sweeping compounds, smoothing face and shaving creams, etc.

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Makers of the Famous Rutchman Mills and Plodders used since 1860. None better.

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Ammonia  
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Benzol  
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Carbon Tetrachloride  
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Bicarbonate  
Bichromate  
Bisulphite  
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Bifluoride or Acid Fluoride  
Meta Silicate  
Nitrate  
Nitrite  
Perborate  
Phosphate  
Sal  
Sheffield  
Silicate  
Silico Fluoride  
Sulphide—Solid

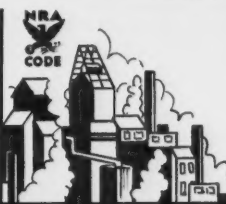
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Better than the U. S. Pharmacopoeia demands.

## SPECIAL CRESOLS

Special Cresols and Special Fractions as required.

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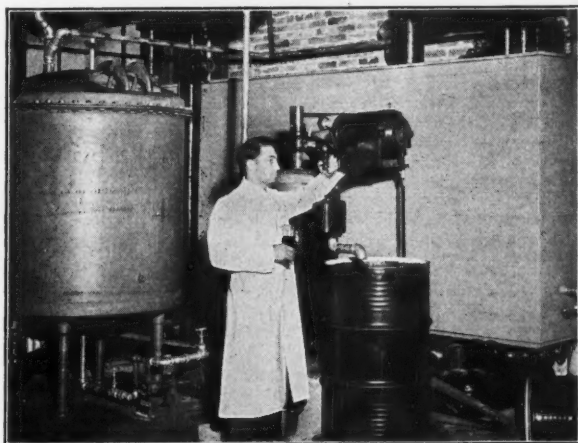
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# PYRETHROL 20

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*Modern Cooling  
and  
Clarifying Unit*

## A STANDARDIZED PYRETHRUM OIL EXTRACT

Made by the vacuum process, using only a petroleum distillate as the extracting solvent. Standardized to contain a minimum of 2.15 grams of pyrethrins per 100 c.c. This extract is properly cooled in the unit shown above, so as to remove any inert that may be present in an extract. PYRETHROL 20 means uniform killing strength, plus essential physical properties of the finished spray.

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### DERRIS

- The finest grade of **derris powder** in the world—standardized at 4% and 5% rotenone. **Derris extract** containing 5 grams of rotenone per 100 c.c. plus the other toxic resins contained in derris root. **Rotenone Crystals.**



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- **Granulated, and powdered.** Milled with modern equipment where heat accumulation is not possible. This extremely fine powder when released into the air remains suspended for a longer period of time. More economical and effective because it comes into more intimate contact with the vital parts of the insect's body.

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# SOAP MACHINERY

*New and Used Special Offerings*

*New Soap Crutchers*



Here are illustrations of two of Newman's brand new all steel, steam jacketed SOAP CRUTCHERS. The CRUTCHER on the left can be used to crutch ANY kind of soap. The CRUTCHER on the right can also be used to crutch any kind of soap but is especially adapted for Crutching laundry soap. These are made in a complete range of sizes. Investigate our equipment and prices before placing your next crutcher order.



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### USED EQUIPMENT

H-A 1500, 3000, 5000 lbs. capacity. Steam Jacketed Crutchers.  
Dopp Steam Jacketed Crutchers. 1000, 1200, 1500 lbs. and 800 gals. capacity.  
Jones Automatic Soap Presses  
Ralston Automatic Soap Presses.  
Scouring Soap Presses.  
Empire State, Dopp & Crosby Foot Presses.  
2, 3, 4, 5 and 6 roll Granite Toilet Soap Mills.  
H-A 4 and 5 roll Steel Mills.  
H-A Automatic and Hand-Power slabbers.

### USED EQUIPMENT

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Perrin 18 inch Filter Press with Jacketed Plates.  
Gedge-Gray Mixers, 25 to 6000 lbs. capacity, with and without Sifter Tops.  
Day Grinding and Sifting Machinery.  
Schultz-O'Neill Mills.  
Day Pony Mixers.  
Gardiner Sifter and Mixer.  
Proctor & Schwartz large roll Soap Chip Dryers complete.

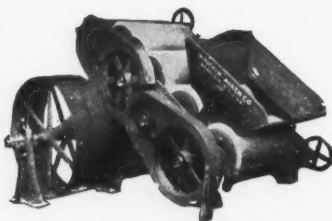
### USED EQUIPMENT

Proctor & Schwartz Bar Soap Dryers.  
Blanchard No. 10-A and No. 14 Soap Powder Mills.  
J. H. Day Jaw Soap Crusher  
H-A 6, 8 and 10 inch Single Screw Plodders.  
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All used equipment is rebuilt in our own shop and is guaranteed in first-class condition

*We buy single items  
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*Our Forty Years of Soap Experience Can Help Solve Your Soap Problems*

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*Priced Right - Under Your Label*

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Made with Olive Oil known the world over for its benefit to the skin. The finest liquid soap possible to buy.

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Contains olive oil, making it preferable to other soap bases. Dissolves quickly.

## **Empire Pine Disinfectant**

Gives a milk white emulsion in water. Has a pine tree odor. A non-poisonous disinfectant having a Coefficient of 4.

## **Empire Metal Polish**

Will not leave white streaks on drying. Polishes any metal. Has no harsh odor. Leaves a brilliant lustre. Non-inflammable and non-settling.

## **Deodorizing Blocks**

No separate containers or holders necessary. Neat in appearance. Reasonably priced. Plenty of odor. A container with each block.

## **Cresol Compound U.S.P.**

Used in hospitals for sterilizing and general disinfecting. Clear solution in water.

## **Health Guard Liquid Soap**

This liquid soap has skin cleansing, deodorizing and germicidal properties. Its healthful odor tells the story.

## **Empire Coal Tar Disinfectant**

Gives a milk white emulsion in water. (Coefficient 3) and (Coefficient 6).

## **Empire Pine Cleanser**

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Cellophane wrapper. One dozen to a carton.

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The first made in this country! Our experience in producing this difficult chemical is valuable to you.

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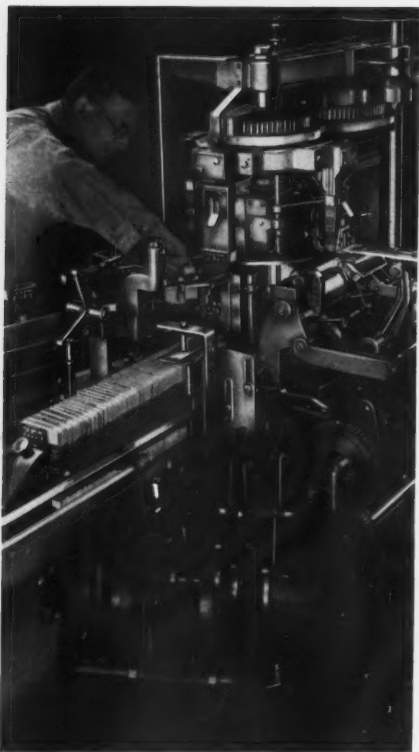
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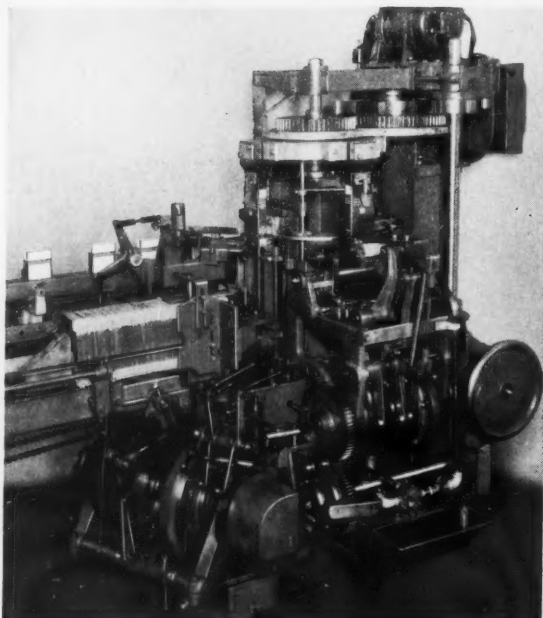
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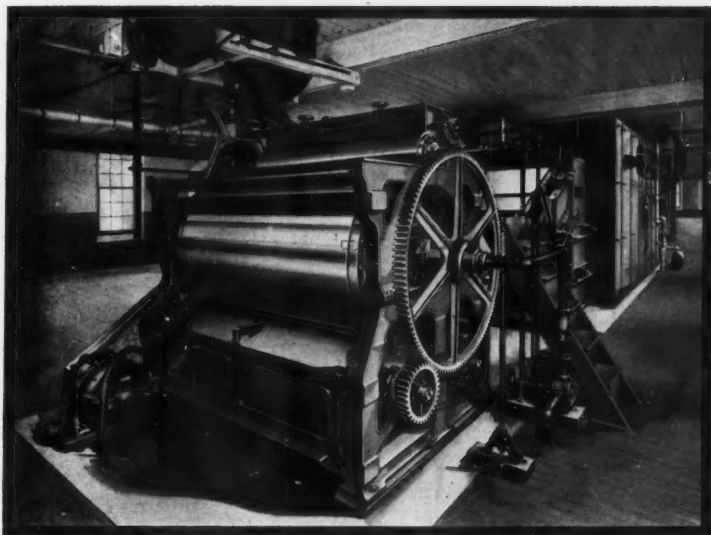
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18 Years of Constant Research and Experience Enables Us To  
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*Here Are Some PYLAM Colors Used All Over the World.*

<b>PYLAM CHLORO GREEN S-310</b>	A water soluble true olive color for all soap and soap products.
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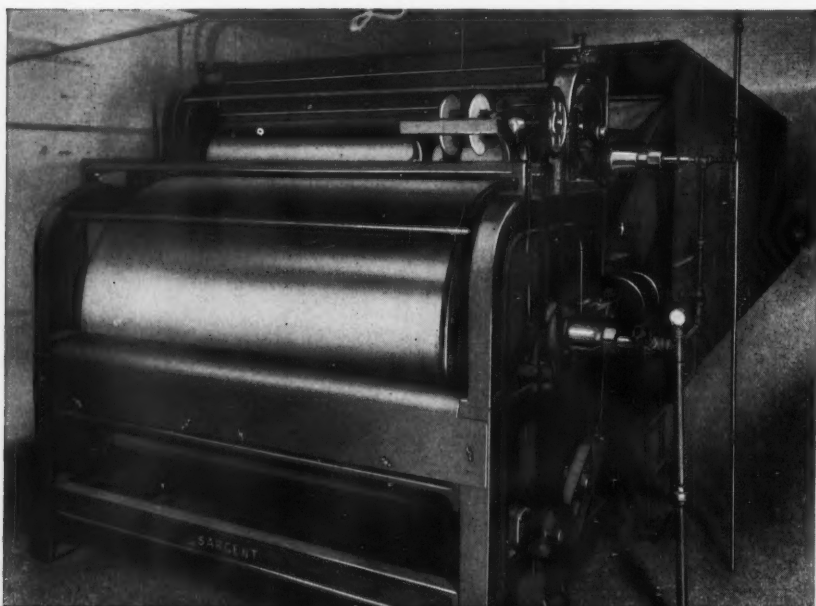
AS the title indicates, the Rolls are NEW and the entire machine is NEW, many valuable improvements having been perfected until this latest Sargent development is now one of the very finest Rolls obtainable.

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MASS., U. S. A.

# **SMITH-WEIHMAN CO., Inc.**

*25 years experience importing*

**GENUINE UNADULTERATED COMMERCIAL OLIVE OIL  
PRIME GREEN SULPHUR OLIVE OIL (OLIVE OIL FOOTS)  
COCONUT OIL**

*for delivery in tank cars,  
tank wagons, barrels and drums*



Selling Agents for  
**The M. Werk Co., Cincinnati, Ohio**

**STEARIC ACID  
OLEIC ACID (Red Oil)**



INTERNATIONAL COMMERCE BLDG.  
**15 MOORE STREET NEW YORK, N. Y.**  
BOWling Green 9-9174 - 9175 - 9176

*Say you saw it in the SOAP BLUE BOOK*



# SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

## SODA ASH

### *Dense - Light - Extra Light*

Representing the highest grade of this product produced commercially today is Solvay 58% Soda Ash.

Its uniformity is your best guarantee of maintaining standard operating schedules.

## CAUSTIC SODA

### *Solid - Flake - Liquid - Ground - Powdered*

The high standard of quality which The Solvay Process Company has established in the alkali field is well exemplified in Solvay Caustic Soda—made from soda ash manufactured by the Solvay process.

For the convenience of the consumer, Solvay Caustic Soda is delivered in the five forms listed above.

Where manufacturers are equipped to handle and store the liquid form, handling costs can be proportionately reduced and convenience greatly facilitated. For full information, send for the

### *Solvay Book on Liquid Caustic Soda*

This latest authoritative publication gives all necessary practical information regarding the unloading and handling of this highly advantageous product.

## CAUSTIC POTASH

### *Solid - Flake - Liquid*

The same high quality that has earned for Solvay Caustic Potash Liquor a preeminent place in the field is now obtainable in the Flake and Solid forms. Solvay Caustic Potash typifies the excellence which has made Solvay Products the outstanding choice of soap makers everywhere.

## SOLVAY SALES CORPORATION

*Alkalies and Chemical Products Manufactured by*

*The Solvay Process Company*

**61 BROADWAY**

**NEW YORK**

Boston   Syracuse   Chicago   Indianapolis   Cleveland   Cincinnati  
Pittsburgh   Detroit   Philadelphia   Kansas City   St. Louis   Houston



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# PRODUCTS

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## FOR YOUR PRIVATE LABEL

Put Solvay quality into your packages and get more profits out of your private label trade. Solvay produces a wide variety of highest quality alkalis which are especially adapted to the needs of repackers. Write today for full information and prices. Ask for booklet SBB.

### SOLVAY SNOWFLAKE CRYSTALS

(Trade Mark Reg.)

Pure white, crystalline, immediately and entirely soluble, always free running, Solvay Snowflake Crystals is an excellent water softener and effective soap saver. Perfect solubility enables this mild cleanser to do its work without leaving a residue. Snowflake Crystals also makes the most perfect base for bath salts.

### SOLVAY FLUF (Trade Mark Reg.)

Fluf makes an ideal cleanser to add to your line of products because it produces the largest package with the lightest weight. Fluf is an extra light soda ash made especially fluffy, bulky and light by a process exclusive with Solvay.

### SPECIAL CLEANSERS

—mixtures of basic materials used in all general cleansing. Solvay manufactures a complete line of these cleansers, covering every cleansing need which can be filled by the use of milder types of alkali. Special booklets describing these products can be obtained from any office of the Solvay Sales Corporation.

### SPECIAL ALKALIES

Solvay Special Alkalies are specially prepared mixtures of a stronger type than the Special Cleansers. These alkalies are well adapted to the heavy duty type of cleaning. Full information will be supplied promptly upon request.

### DETERGENT

Detergent of special grades adapted to various kinds of scouring, is another Solvay line which is providing profitable business opportunities in private label trade. Another field in which Solvay quality enables you to *beat* competition! Full information upon request.

### PARA-DICHLORBENZENE

*In Fine — Medium — Coarse Crystals*

Especially well adapted to block manufacture. Solvay Para-dichlorobenzene is supplied in carefully graded crystal form, insuring perfect blending with colors and perfumes. A product of exceptional purity. Delivered in a selection of packages wide enough to meet all marketing needs. Write today for prices and full information.

## SOLVAY SALES CORPORATION

*Alkalies and Chemical Products Manufactured by  
The Solvay Process Company*

61 BROADWAY

NEW YORK

Boston Syracuse Chicago Indianapolis Cleveland Cincinnati  
Pittsburgh Detroit Philadelphia Kansas City St. Louis Houston

## Sonneborn Specialties- DEO-BASE

Petroleum oil refined to freedom from kerosene odor. Its use for household and industrial insecticide sprays and liquids enables the manufacturer to offer a finished product which finds acceptance by exacting consumers such as, hotels, housewives, clubs, dairies, food markets, etc. Deo-Base is designated for standard comparative test purposes by the National Association of Insecticide and Disinfectant Manufacturers, since it meets all their requirements for this purpose.

## WHITE OILS

All types and grades for the manufacture of creams and cosmetics, pharmaceuticals, auto and furniture polishes, etc. USP Heavy, USP Light and also Technical grades.

## PETROLATUMS

Daugherty Brand (USP). Both Yellow and White grades for all cosmetic, pharmaceutical and industrial purposes.

## SONO-JELL

Base for liquefying cleansing creams, pomades, ointments, hair preparations, etc.

## TRI-OL

For soapless oil shampoos, bath oils, brushless shaving creams, etc.

*Write us for further information*

## L. SONNEBORN SONS, Inc.

*Refiners of White Oils and Petrolatums*

New York Office  
88 Lexington Avenue

Los Angeles Office  
215 West 5th Street

Chicago Office  
820 Tower Court

REFINERIES:—Petrolia, Pa., Franklin, Pa.

*Say you saw it in the SOAP BLUE BOOK*

# NEW AND REBUILT SOAP MACHINERY

We offer to the trade our NEW IMPROVED 600 and 1200 lb. FRAMES, SLABBERS, CUTTING TABLES, FOOT AND POWER PRESSES, DRY MIXERS, SOAP CHIP AND POWER GRINDERS, etc.

ALL REBUILT EQUIPMENT SHIPPED FROM OUR SHOPS  
IS CAREFULLY OVERHAULED AND GUARANTEED.

- |  |   |
|--|---|
| 1—Automatic Cutting Table.                                 | 2—Vertical Soap Boiling Tanks.                            |
| 2—Hand Power 2-Way Tables.                                 | 4—Vertical Soap Crutchers, 1000, 1500, 3000 and 5000 lbs. |
| 1—Automatic Power Slabber.                                 | 2—Horizontal 1500 lb. Crutchers.                          |
| 2—Hand Power Slabbers.                                     | 4—Soap Chippers, 4 and 6 knife.                           |
| 2—Blanchard No. 10A and 14 Powder Mills.                   | 2—3-roll Granite Stone Mills.                             |
| 1—Power Soap Crusher.                                      | 2—4-roll Granite Stone Mills.                             |
| 6—3 and 4 cage Disintegrators, 12" to 36".                 | 4—3-roll Watercooled Steel Mills.                         |
| 2—Broughton Powder Mixers.                                 | 2—5-roll Watercooled Steel Mills.                         |
| 8—Dry Powder Mixers and Sifters, 50 to 5000 lbs. capacity. | 4—Soap Foot Presses.                                      |
| 4—Powder Fillers, power driven.                            | 3—Para Block Presses.                                     |
| 6—Plodders, 4", 6", 8" and 10" sizes.                      | 1—Ralston Power Soap Press.                               |
| 100—Soap Frames, 600 and 1200 lbs. capacity.               | 18—Filter Presses, 6" x 6" to 42" x 42".                  |
| 4—Automatic Soap Wrapping Machines.                        | 2—Amalgamator Mixers.                                     |
|  | 6—Pony Mixers, 8 to 40 gals.                              |
|  | 2—Power Soap Cake Cutters.                                |

## SPECIALS

- 3—Proctor Soap Chip and Powder Dryers, complete with Chilling Rolls.  
3—Glycerine Evaporators, single, double and triple effect.  
2—Jones Automatic Soap Cake Presses.  
6—Cooling Roll Units, 3'x6', 4'x7', 4'x9', 5'x12'.  
Filling, Closing and Crimping Machines for tubes and jars.

SEND FOR COMPLETE LIST (BULLETIN NO. 15)  
WE BUY AND SELL FROM SINGLE ITEMS TO  
COMPLETE PLANTS.

MISCELLANEOUS:—Caldrons, Storage & Mixing Tanks, Kettles, Remelters, Roller & Belt Conveyors, Barrel Packers, Soap Dies, Mill Boxes, Racks, Boilers, Pumps, Engines, Fans and Blowers, etc.

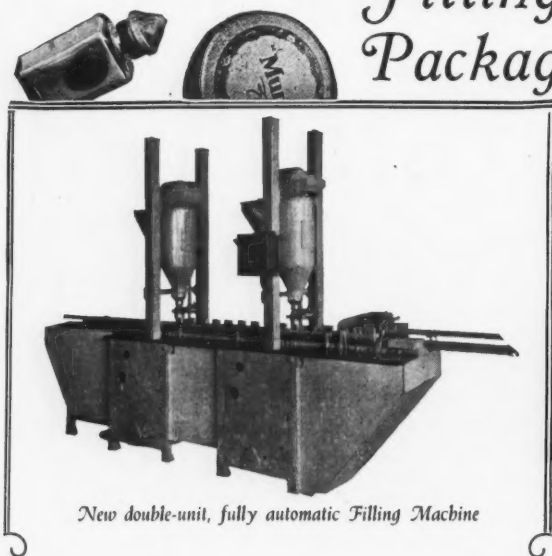
# STEIN-BRILL (CORPORATION)

183 VARICK STREET  
Phone  
Walker 5-6892-3-4

Sales Agents for  
Geo. G. Rodgers Co.

NEW YORK, N. Y.  
Cable Address  
"BRISTEN"

# Filling and Packaging Equipment



New double-unit, fully automatic Filling Machine

When you need a single machine or a complete packaging line, S & S have the time-tested answer to every one of your problems.



**S**TOKES & SMITH Filling and Packaging Machinery is being used to fill and package 126 different materials. Stokes & Smith Engineers have solved the packaging, production and equipment problems of a list of manufacturers that read like a "Who's Who" of American Industry.

It will pay you to investigate the complete service and broad experience offered by Stokes & Smith. Write for literature.

**\$LS** Filling Machines

**\$LS** Bag & Envelope Sealers

**\$LS** Carton Fillers & Sealers

**\$LS** Carton Top & Bottom Sealers

**\$LS** Gross & Net Weight Scales

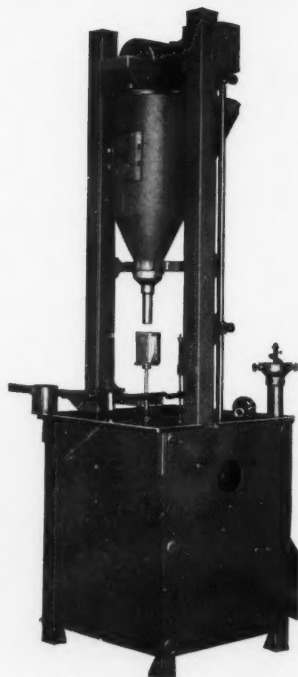
**\$LS** Tight-Wrapping Machines

## STOKES & SMITH CO

PACKAGING MACHINERY • BOX MAKING MACHINERY

4915 Summerdale Ave., Philadelphia, U. S. A.

British Office: 23, Goswell Road, London, E. C. 1



Universal Filling Machine

For economy and success, send your packaging problems to S. & S.

Say you saw it in the SOAP BLUE BOOK

# SOAPMAKERS OILS

*and*

## Aromatic Chemicals

We have always been recognized as headquarters for the finest quality soap perfumery oils and synthetic aromatic chemicals. We offer these products at competitive figures and are prepared to make immediate shipment—of a pound or a ton.

### ESSENTIAL OILS

Oil Anise  
Oil Bay  
Oil Bergamot  
Oil Bois de Rose  
Oil Camphor, White  
Oil Camphor, Sassafrassy  
Oil Cassia, Redistilled  
Oil Cedarleaf  
Oil Cedarwood  
Oil Citronella, Java

Oil Citronella, Ceylon  
Oil Cloves  
Oil Eucalyptus  
Oil Geranium, African  
Oil Geranium, Bourbon  
Oil Kananga, Java  
Oil Lavender, Fleurs  
Oil Lemon, Italian  
Oil Lemongrass  
Oil Linaloe, Mexican

Oil Orange, Sweet, Italian  
Oil Patchouly  
Oil Pennyroyal  
Oil Peppermint  
Oil Petitgrain  
Oil Pimento Berries  
Oil Pineneedles, Siberian  
Oil Rosemary  
Oil Sandalwood, W. I.  
Oil Sandalwood, E. I.

Oil Sassafras, Art.  
Oil Sassafras, Natural  
Oil Spearmint  
Oil Spike Lavender  
Oil Thyme Red  
Oil Thyme White  
Oil Vetivert, Bourbon  
Oil Wormseed  
Oil Ylang Ylang, Bourbon  
Oil Ylang Ylang, Madagascar

### AROMATIC CHEMICALS

*For our offerings of these products, refer to  
advertisement facing the inside front cover.*

## UNGERER & CO.

13-15 West 20th Street  
NEW YORK

*Say you saw it in the SOAP BLUE BOOK*

# EXPERIENCE

*are constantly available to customers of this House.*

## SODIUM PHOSPHATES

*Warner*

### MONO-, DI-, TRI-,

**Warner Mono-Sodium Phosphate**—Much of the reputation of the House of Warner has been built upon this product. It has been a Standard of Quality in the Food Products, Medicinal and Pharmaceutical trades for many years.

**Warner Di-Sodium Phosphate**—Enjoys the highest reputation for dependable uniformity in the Textile, Paint, Leather and other fields.

**Warner Tri-Sodium Phosphate**—Fine Quality and Uniform performance are assured. It meets the varied needs of the customer in either physical properties or chemical content. To those users of this product for water treating, etc., Warner has much information of value looking toward a reduction in operating costs.

The wide variety of uses to which the Sodium Phosphates are put makes imperative the selection of a Brand that assures Highest Quality, Uniformity and Production under the best manufacturing practice.

#### ADDITIONAL WARNER QUALITY PRODUCTS

Acid Phosphoric  
Aluminum Hydrate  
Barium Peroxide  
Blanc Fixe  
Carbon Bisulphide  
Carbon Tetrachloride  
Chlorine, *Liquid*  
Soda Caustic, *Liquid*  
Soda Caustic, *Solid*  
Sodium Hypochlorite  
Solution  
Sodium Sulphide  
Sulphur Chloride  
*Yellow and Red*  
Water Treating  
Compounds

*An opportunity to submit  
samples and quotations  
is solicited.*

# WARNER

## CHEMICAL COMPANY

Pioneer Producers 1886

CHRYSLER BUILDING • NEW YORK CITY  
135 EAST SUPERIOR STREET • CHICAGO  
70 RICKARD STREET • SAN FRANCISCO

EXCLUSIVE SALES AGENTS FOR WESTVACO CHLORINE PRODUCTS, INC.

*Say you saw it in the SOAP BLUE BOOK*



## *Facts About The* **SOAP BLUE BOOK**

**Circulation**—One copy to each SOAP subscriber manufacturing soaps of all kinds, disinfectants, cleansers, polishes, household insecticides, deodorants and related products. **TOTAL PRINTING**—3000 copies. These companies make over sixty individual types of products, including liquids, semi-liquids, pastes, powders, flakes, cakes, etc. They are marketed in small packages at retail, and in bulk to institutions, office buildings, factories, hospitals, etc.

### **Advertising Rates—**

1 page .....	\$ 60.00	4 page inserts .....	150.00
2 pages .....	100.00	Inside front cover or page opposite .....	125.00
3 pages .....	120.00	Inside back cover or page opposite .....	100.00
2 page inserts .....	100.00		

**Listings**—No charge, the only requirement being that companies must be headquarters for items under which they are listed. Advertisers are listed in black type and each listing refers the reader to the page on which the advertisers's catalog announcement appears.

### **Why You Should Advertise in the SOAP BLUE BOOK**

—The Blue Book is the only buying directory for manufacturers and jobbers of soaps, cleaning compounds, household insecticides, disinfectants, polishes, cleansers, deodorants, sanitary accessories, etc. . . . The Blue Book is helpful in locating new buyers as it is the chief source of information for consumers unfamiliar with sources of supply . . . Each new company subscribing during the year immediately receives a copy of the Blue Book. . . Blue Books are on file in American Consulates throughout the world to assist foreign buyers in locating accredited American sources of supply.

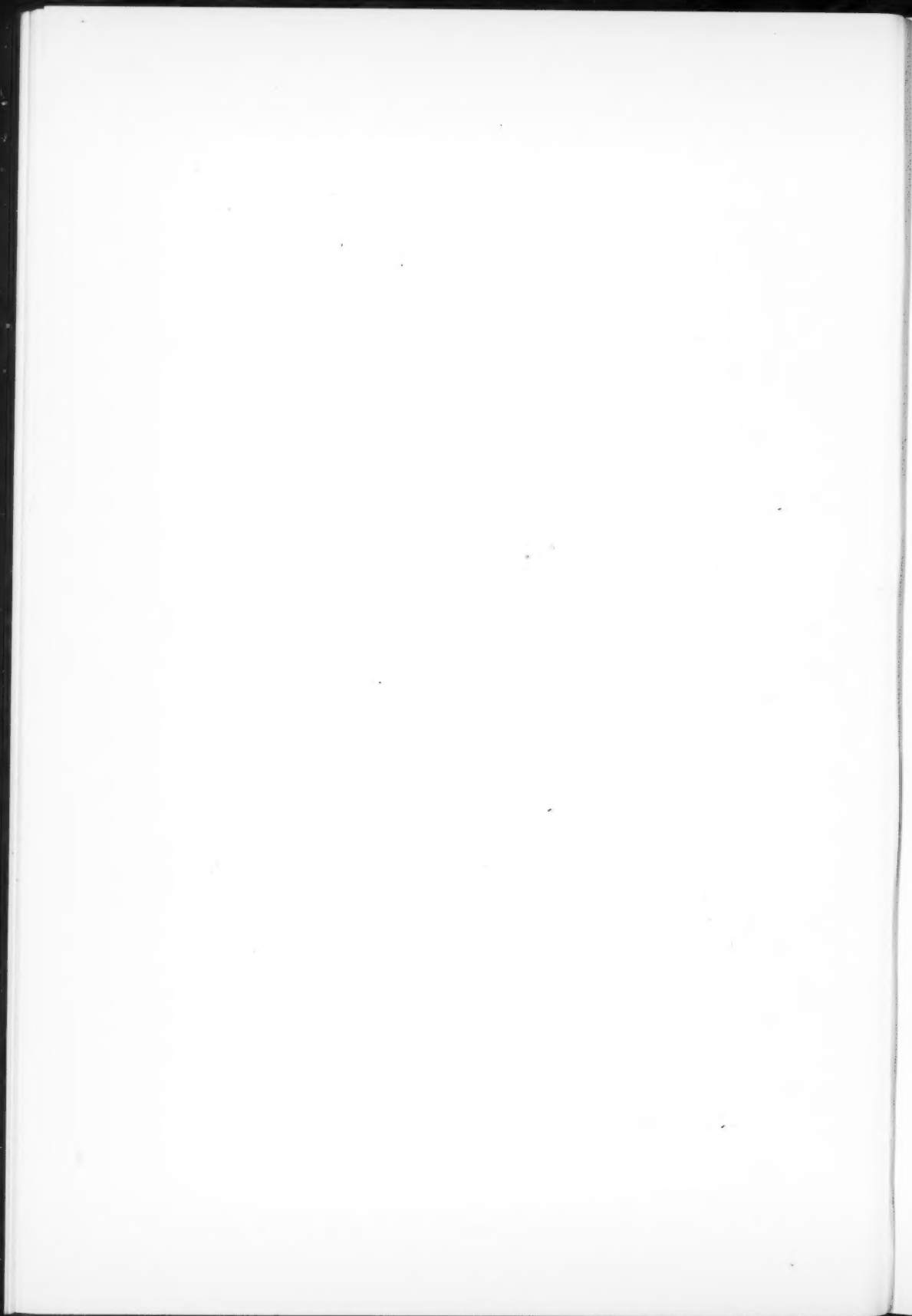
*Published by*

**MACNAIR-DORLAND CO.**

254 W. 31st Street

New York City

*Say you saw it in the SOAP BLUE BOOK*



# **Buyers' Guide Section**



**BLUE BOOK and CATALOG**  
for the Soap, Insecticide, Disinfectant  
and Allied Industries

*for 1935*



A buying directory showing sources of supply for raw materials, machinery, equipment, etc. used by manufacturers of soaps, disinfectants, insecticides and allied products.

**ABRASIVES**, see **PUMICE STONE, SILICA, ETC.**

### ACETONE

(see also *Dealers*)

Carbide & Carbon Chemicals Corp.,  
30 E. 42nd St., N.Y.  
Cleveland Cliffs Iron Co., Union Trust Bldg.,  
Cleveland  
Commercial Solvents Corp., 17 E. 42nd St., N.Y.  
Wm. S. Gray & Co., 342 Madison Ave., N.Y.  
R. W. Greeff & Co., 10 E. 40th St., N.Y.  
U. S. Industrial Chem. Co., 60 E. 42nd St.,  
N.Y.

**ACIDS (Sulfuric, Muriatic, Nitric, Acetic, Etc.)**

(see also *Dealers*)

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Dow Chemical Co., Midland, Mich., See page 27.  
E. I. Du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.  
General Chemical Co., 40 Rector St., N.Y. See page 32.  
Grasselli Chemical Co., 1300 Guardian Bldg.,  
Cleveland See page 35.  
Hooker Electrochemical Co., 60 E. 42nd St.,  
N.Y. See page 36.  
Innis, Speiden & Co., 117 Liberty St., N.Y. See page 40.  
Monsanto Chemical Works, 1724 S. 2nd St.,  
St. Louis  
Rohm & Haas Co., Inc.,  
222 W. Washington Sq., Phila., See page 57.  
Stauffer Chem. Co., 420 Lexington Ave., N.Y.  
Swann Chemical Co., 420 Lexington Ave., N.Y.  
Victor Chemical Wks., 141 W. Jackson Blvd.,  
Chicago

### ADHESIVES

Arabul Mfg. Co., 110 E. 42nd St., N.Y.  
Armour Glue Wks., 1355 W. 31st St., Chicago  
See page 14.  
Dennison Mfg. Co., Framingham, Mass.  
W. H. Gage Glue Co., 19 S. Main St., St. Louis  
Grasselli Chemical Co., 1300 Guardian Bldg.,  
Cleveland See page 35.  
Hull Co., 305 Washington St., Brooklyn  
Mechling Bros. Chemical Co., Camden, N. J.  
National Adhesives Corp., 822 Greenwich St.,  
N.Y.  
Philadelphia Quartz Co., 121 S. 3rd St., Phila.  
Sanford Mfg. Co., W. Congress & Peoria St.,  
Chicago  
Staley Sales Corp., Decatur, Ill.  
Standard Silicate Co., Bond Hill, Cincinnati  
Stein, Hall & Co., 285 Madison Ave., N.Y.

### AGITATORS

Alloy Prods. Corp., 221 Madison St.,  
Waukesha, Wisc.  
Alsop Engineering Corp., 39 W. 60th St., N.Y.  
Atlantic Tank & Barrel Corp., North Bergen,  
N. J.  
Beach-Russ Co., 50 Church St., N.Y.  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
J. H. Day Co., 1144 Harrison Ave., Cincinnati  
Foster Pump Works, 50 Washington St., Bklyn.  
Houchin Machinery Co., Hawthorne, N. J.  
See page 37.

Huber Machine Co., 259 46th St., Brooklyn  
See page 38.

J. M. Lehmann Co., 248 W. Broadway, N.Y.  
Littleford Bros., 443 E. Pearl St., Cincinnati  
Mixing Equipment Co., Inc., 1024 Garson Ave.,  
Rochester, N. Y.

Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.

Patterson Foundry & Machy. Co.,  
East Liverpool, Ohio  
Sowers Mfg. Co., 1296 Niagara St., Buffalo  
Stein-Brill Corp., 183 Varick St., N.Y. (Used)  
See page 63.

Struthers-Wells Co., Warren, Pa.

### AGRICULTURAL INSECTICIDES

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Ansbacher-Siegle Corp., Rosebank, S. I.  
Bowker Chemical Co., 50 Church St., N.Y.  
California Spray Chemical Corp.,  
15 Shattuck Sq., Berkeley, Calif.  
Chipman Chemical Co., Bound Brook, N. J.  
James Good, Inc., Kensington, Phila.  
See page 34.  
Grasselli Chemical Co., Guardian Bldg.,  
Cleveland See page 35.  
McLaughlin, Gormley King Co.,  
1715—5th St., S. E., Minneapolis  
Mechling Bros. Chemical Co., Camden, N. J.  
Sherwin-Williams Co., 292 Madison Ave., N.Y.

**AIR COMPRESSORS (see COMPRESSORS, AIR)**

**ALCOHOL (Ethyl and Denatured)**

(see also *Dealers*)

American Coml. Alcohol Corp.,  
420 Lexington Ave., N.Y.  
American Solvents & Chem. Corp.,  
285 Madison Ave., N.Y.  
Carbide & Carbon Chemicals Corp.,  
30 E. 42nd St., N.Y.  
Commercial Solvents Corp., 230 Park Ave.,  
N.Y.  
Industrial Chem. Sales Co., Inc.,  
230 Park Ave., N.Y.  
Pennsylvania Sugar Co., 95 Wall St., N.Y.  
Publisher Coml. Alcohol Co., 260 S. Broad St.,  
Phila.  
U. S. Industrial Alcohol Co.,  
110 E. 42nd St., N.Y.

**ALCOHOL (Methyl or Wood)**

(see also *Dealers*)

Carbide & Carbon Chemicals Corp.,  
30 E. 42nd St., N.Y.  
Cleveland-Cliffs Iron Co., Union Trust Bldg.,  
Cleveland  
Commercial Solvents Corp., 230 Park Ave.,  
N.Y.  
Industrial Chem. Sales Co., 230 Park Ave., N.Y.  
E. I. Du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.  
U. S. Industrial Alcohol Co.,  
60 E. 42nd St., N.Y.  
Wood Products Co., Buffalo, N.Y.

**ALKALIES, see CAUSTIC SODA, SODA ASH, CAUSTIC POTASH, ETC.**

### ALUMINUM FOIL

Aluminum Co. of America, Gulf Bldg.,  
Pittsburg

**ALUMINUM** (filings and shot for drain pipe cleaners)

**ALUMINUM STEARATE** (see **STEARATES**)

## ALUMS

(see also *Dealers*)

Aluminum Co. of America, Gulf Bldg.,  
Pittsburg  
American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
**Armour Ammonia Wks.**, 1355 W. 31st St.,  
Chicago See page 14.  
**E. I. du Pont de Nemours & Co.**,  
Wilmington, Del. See page 4.  
**General Chemical Co.**, 40 Rector St., N.Y.  
See page 32.  
**Grasselli Chemical Co.**, 1300 Guardian Bldg.,  
Cleveland See page 35.  
**Harshaw Chemical Co.**, 1945 E. 97th St.,  
Cleveland  
**Innis, Speiden & Co.**, 117 Liberty St., N.Y.  
See page 40.  
Paper Makers Chem. Corp., Kalamazoo, Mich.  
**Rohm & Haas Co., Inc.**,  
222 W. Washington Sq., Phila., See page 57.  
**Stauffer Chem. Co.**, 420 Lexington Ave., N.Y.

## AMALGAMATORS

**Consolidated Prods. Co.**, 15 Park Row, N.Y.  
(Used) See page 23.  
**Houchin Machinery Co.**, Hawthorne, N. J.  
See page 37.  
**Huber Mach. Co.**, 259—46th St., Brooklyn  
See page 38.  
**J. M. Lehmann Co.**, 248 West B'way, N.Y.  
**Newman Tallow & Soap Machy. Co.**,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
**Stein-Brill Corp.**, 183 Varick St., N.Y. (Used)  
See page 63.

## AMMONIA WATER

(see also *Dealers*)

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
**Barrett Co.**, 40 Rector St., N.Y. See page 18.  
**Henry W. Bower Chemical Co.**, Phila.  
**Bowker Chem. Co.**, 50 Church St., N.Y.  
**E. I. du Pont de Nemours & Co.**,  
Wilmington, Del. See page 4.  
**General Chemical Co.**, 40 Rector St., N.Y.  
See page 32.  
**Grasselli Chemical Co.**, 1300 Guardian Bldg.,  
Cleveland See page 35.  
**Mathieson Alkali Works**, 60 E. 42nd St., N.Y.  
**Rohm & Haas Co., Inc.**,  
222 W. Washington Sq., Phila., See page 57.

## AMMONIUM BI-FLUORIDE

(see also *Dealers*)

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
American Fluoride Corp., 151 W. 19th St., N.Y.  
**E. I. du Pont de Nemours & Co.**,  
Wilmington, Del. See page 4.  
**Harshaw Chemical Co.**, 1945 E. 97th St.,  
Cleveland

**Innis, Speiden & Co.**, 117 Liberty St., N.Y.  
See page 40.  
**Jungmann & Co.**, 157 Chambers St., N.Y.  
**Merck & Co.**, Rahway, N. J.  
**Pfaltz & Bauer, Inc.**, 300 Pearl St., N.Y.

## AMMONIUM CARBONATE

(see also *Dealers*)

**American-British Chem. Supplies, Inc.**,  
180 Madison Ave., N.Y. See page 10.  
American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
**E. I. du Pont de Nemours & Co.**,  
Wilmington, Del. See page 4.  
**Innis, Speiden & Co.**, 117 Liberty St., N.Y.  
See page 40.  
**Jungmann & Co.**, 157 Chambers St., N.Y.

## AMMONIUM PERSULFATE (see POTASSIUM PERSULFATE)

## AMYL CINNAMIC ALDEHYDE (see AROMATIC CHEMICALS)

## AMYL SALICYLATE (see AROMATIC CHEMICALS)

## ANIMAL DIPS (see CATTLE DIPS)

## ANISE OIL (see ESSENTIAL OILS)

## ANISIC ALDEHYDE (see AROMATIC CHEMICALS)

## ANT POISONS

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
**Lethelin Products Co.**, Manhasset, N.Y.  
**John Opitz, Inc.**, 50-14—39th St.,  
Long Island City, N.Y.  
**Ore & Chemical Corp.**, 40 Rector St., N.Y.  
**Soilicide Labs.**, 8 Laurel Pl., Upper Montclair,  
N. J.

## AROMATIC CHEMICALS (for perfuming)

**American-British Chem. Supplies, Inc.**,  
180 Madison Ave., N.Y. See page 10.  
**van Ameringen-Haebler, Inc.**,  
315—4th Ave., N.Y. See pages 12,13.  
**Arthur Bennett, Inc.**, 109 W. Austin Ave.,  
Chicago  
**Budd Aromatic Chemical Co.**,  
667 Washington St., N.C.  
**Ph. Chaleyer, Inc.**, 200 Varick St., N.Y.  
**Antoine Chiris Co.**, 147 Waverly Pl., N.Y.  
**Compagnie Parento, Inc.**,  
Croton-on-Hudson, N.Y.  
**Dodge & Olcott Co.**, 180 Varick St., N.Y.  
**Dow Chemical Co.**, Midland, Mich., See page 27.  
**E. I. du Pont de Nemours & Co., Inc.**,  
Wilmington, Del. See page 4.  
**P. R. Dreyer Inc.**, 12 E. 12th St., N.Y.  
**A. C. Drury & Co.**, 219 East North Water St.,  
Chicago, Ill.  
**Felton Chemical Co.**, 603 Johnson Ave., Bklyn.  
See page 30.  
**Benj. French, Inc.**, 160—5th Ave., N.Y.

**AROMATIC CHEMICALS (Cont'd)**

Fritzsch Brothers, Inc., 78 Beekman St., N.Y.  
General Drug Co., 170 Varick St., N.Y.

**Givauden-Delawanna, Inc., 80—5th Ave., N.Y.**  
See inside front cover, 33.

Arthur Henriksen, 30 Irving Pl., N.Y.  
Industrial Organics, Inc., 131 E. 45th St., N.Y.  
C. E. Ising Corp., Flushing, L. I., N.Y.  
**Kay-Fries Chemicals, Inc.,**  
180 Madison Ave., N.Y.

See page 10.

Pierre Lemoine, Inc., 200 Varick St., N.Y.  
Geo. Lueders & Co., 427 Washington St., N.Y.  
Magnus, Mabce & Reynard, 32 Cliff St., N.Y.  
A. Maschmeijer, Jr., Inc., 43 West 16th St., N.Y.  
Monsanto Chemical Works, 1724 S. 2nd St.,  
St. Louis

Naugatuck Chem. Co., 1790 Broadway, N.Y.  
Neumann-Buslee & Wolfe, 224 W. Huron St.,  
Chicago

Norda, Inc., 601 W. 26th St., N. Y.

Northwestern Chemical Co., Wauwatosa, Wis.

Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.

Riviera Prods. Co., 215 W. Ohio St.,  
Chicago, Ill.

H. C. Ryland, Inc., 161 Water St., N.Y.

Edwin Seebach Co., 912 Broadway, N.Y.

Sherka Chemical Co., 86 Orange St.,  
Bloomfield, N. J.

Wm. G. Sibbach & Co., 201 S. 2nd Ave.,  
Maywood, Ill.

George Silver Import Co., 461—4th Ave., N.Y.

Synfleur Scientific Labs., Monticello, N.Y.

A. M. Todd Co., Kalamazoo, Mich.

Trubek Labs., East Rutherford, N. J.

**Ungerer & Co., 13 W. 20th St., N.Y.**

See page facing inside front cover, 65.

Van Dyk & Co., 57 Wilkinson Ave.,  
Jersey City, N. J.

Albert Verley, Inc., 11 E. Austin Ave., Chicago

**ARSENICAL DIPS**

**Baird & McGuire, Inc., Holbrook, Mass.**

See pages 16, 17.

Wm. Cooper & Nephews, 1909 Clifton Ave.,  
Chicago

**General Chemical Co., 40 Rector St., N.Y.**

See page 32.

**James Good, Inc., Kensington, Phila.**

See page 34.

**Koppers Products Co., Koppers Bldg.**

See page 41.

McLaughlin, Gormley King Co., Minneapolis

**White Tar Co., Kearny, N. J.** See page 41.

**ARSENIC**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.

American Smelting & Refining Co.,  
120 Broadway, N.Y.

Charles Hardy, Inc., 415 Lexington Ave., N.Y.

Harshaw Chemical Co., Cleveland

**Innis, Speiden & Co., 117 Liberty St., N.Y.**

See page 40.

**AUTO SOAPS**

**Armour Soap Wks., 1355 W. 31st St., Chicago**

See page 14.

Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.

**Clifton Chemical Co., 247 Front St., N.Y.**

See page 21.

James Counts Soap Co., 2nd & Washington  
Aves, St. Louis, Mo.

**Davies Young Soap Co., Dayton, Ohio**

See page 25.

Diamond Soap Co., 1 Lowden St.,

Elizabeth, N. J.

**Eagle Soap Corp., Huntington, Ind.**

See page 28.

J. Eavenson & Sons, Del. & Penn. Sts.,  
Camden, N. J.

**Fuld Bros., 2308 Frederick Ave., Baltimore**

See page 31.

Genseke Bros., W. 48th Pl. & Whipple St.,  
Chicago, Ill.

**James Good, Inc., Kensington, Phila.**

See page 34.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.

Jansen Soap & Chemical Co.,

324 Leavenworth St., San Francisco, Cal.

H. Kohnstamm & Co., 91 Park Pl., N.Y.

Kranich Soap Co., 54 Richards St., Brooklyn  
Laurel Soap Mfg. Co., Tioga & Almond Sts.,  
Phila.

Los Angeles Soap Co., Los Angeles, Calif.

Marshall Prods., Inc., 806 N. 1st St., St. Louis

National Soap Co., 357 South 25th St.,

Tacoma, Washington

North Coast Chem. & Soap Wks.,

Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.

Paper Makers Chemical Corp.,

Kalamazoo, Mich.

Peck's Prod. Co., 5224 N. 2nd St., St. Louis

Procter & Gamble Co., Cincinnati

Theo. B. Robertson Prods. Co.,

700 W. Division St., Chicago

Royal Soap & Chem. Co., 5111 S. Central Ave.,  
Los Angeles

Geo. A. Schmidt Co., 236 W. North Ave., Chgo.

Werner G. Smith Co., 2191 W. 110th St.,  
Cleveland

John T. Stanley Co., 640 W. 30th St., N.Y.

Tremco Mfg. Co., 393 East 131st St., Cleveland

U. S. Sanitary Specialties Corp.,

435 S. Western Ave., Chicago

Vliet Soap Co., 638 Monroe St., Brooklyn

Warren Soap Mfg. Co., 51 Waverly St.,

Cambridge, Mass.

Chas. W. Young & Co., Phila.

**BAG LINERS**

Arkell Safety Bag Co., 10 E. 40th St., N.Y.

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis

Chase Bag Co., 250 W. 57th St., N.Y.

Crepe-Kraft Co., 114 Adams St., Newark, N. J.

Mente & Co., New Orleans, La.

Paper Service Co., Lockland, Cincinnati, O.

St. Regis Paper Co., 60 E. 42nd St., N.Y.

**BAGS (Cloth)**

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis

Central Bag & Burlap Co.,

4513 S. Western Blvd., Chicago

Chase Bag Co., 250 W. 57th St., N.Y.

Dayton Bag & Burlap Co., Dayton, O.

Fulton Bag & Cotton Mills, Atlanta, Ga.

Hammond Bag & Paper Co.,

Wellsburg, W. Va.



**BAGS (Cloth) Cont'd**

Mente & Co., New Orleans, La.  
Paper Service Co., Lockland, Cincinnati  
Premier Bag Co., 157 South St., N.Y.

**BAGS (Paper)**

Arkell Safety Bag Co., 10 E. 40th St., N.Y.  
Bemis Bro. Bag Co., 603 S. 4th St., St. Louis  
Chase Bag Co., 250 W. 57th St., N.Y.  
Crepe-Kraft Co., 114 Adams St., Newark, N. J.  
Hammond Bag & Paper Co.,  
Wellsburg, W. Va.  
Nashua Gummed & Coated Paper Co.,  
Nashua, N. H.  
Paper Service Co., Lockland, Cincinnati  
St. Regis Paper Co., 60 E. 42nd St., N.Y.  
Union Bag & Paper Co., 233 B'way, N.Y.

**BAGS (Waterproof)**

Bemis Bro. Bag Co., 603 S. 4th St., St. Louis  
Chase Bag Co., 250 W. 57th St., N.Y.  
Hammond Bag & Paper Co.,  
Wellsburg, W. Va.  
Paper Service Co., Lockland, Cincinnati, O.  
St. Regis Paper Co., 60 E. 42nd St., N.Y.

**BALSAMS**

van Ameringen-Haebler, Inc.,  
315-4th Ave., N.Y. See pages 12, 13.  
Antoine Chiris Co., 147 Waverly Pl., N.Y.  
Dodge & Olcott Co., 180 Varick St., N.Y.  
P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
Geo. Lueders & Co., 427 Washington St., N.Y.  
Magnus, Mabree & Reynard, 32 Cliff St., N.Y.  
S. B. Penick & Co., 132 Nassau St., N.Y.  
H. C. Ryland, Inc., 161 Water St., N.Y.  
Unger & Co., 13 W. 20th St., N.Y.  
See page facing inside front cover, 65.  
Albert Verley, Inc., 11 E. Austin Ave., Chicago

**BARIUM CARBONATE**

Alton Barium Prods. Co., Alton, Ill.  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
Grasselli Chemical Co., 1300 Guardian Bldg.,  
Cleveland See page 35.  
Harshaw Chemical Co.,  
1945 E. 97th St., Cleveland  
Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
Merck & Co., Rahway, N. J.  
Wishnick-Tumpeper, Inc., 253 Front St., N.Y.

**BARREL LINERS**

Arkell Safety Bag Co., 10 E. 40th St., N.Y.  
Bemis Bro. Bag Co., 603 S. 4th St., St. Louis  
Chase Bag Co., 250 W. 57th St., N.Y.  
Crepe-Kraft Co., 114 Adams St., Newark, N. J.  
Paper Service Co., Lockland, Cincinnati, O.

**BARRELS (Fibre)**

Carpenter Container Co., 147-41st St., Bklyn.  
Champion Container Co., Water & Morris Sts.,  
Philadelphia  
Container Co., Van Wert, O.  
Diamond State Fibre Co., Bridgeport, Pa.  
Master Package Corp., Owen, Wisc.  
Rogers Fibre Co., 210 Lincoln St., Boston  
Spaulding Fibre Co., Rochester, N. H.

**BARRELS (Steel)**

American Cooperage Co., Maurer, N.J.  
American Steel Package Co., Defiance, O.  
Draper Mfg. Co., Cleveland, O.  
Fetter Steel Barrel Corp., Buffalo  
Globe Steel Barrel Co., Cleveland  
Manion Steel Barrel Co., Rouseville, Pa.  
Maurer Steel Barrel Co., 105 Avenue L.,  
Newark, N. J.  
Niles Steel Prod. Co., 465 Walnut St.,  
Niles, Ohio  
Ohio Pail Co., Middlefield, O.  
Petroleum Iron Works Co., Sharon, Pa.  
Pittsburgh Can Co., Pittsburgh  
Pressed Steel Tank Co., Milwaukee, Wis.  
Republic Steel Package Co., 7930 Jones Rd.,  
Cleveland  
St. Louis Steel Package Co., St. Louis, Mo.  
John Trageser Steam Copper Works,  
Grand Ave., Maspeth, L. I., N.Y.  
Wackman Welded Ware Co., 7th & Victor Sts.,  
St. Louis  
Wheeling Corrugating Co., Wheeling, W. Va.  
Wilson & Bennett Mfg. Co.,  
6532 S. Menard St., Chicago

**BARRELS (Used Steel)**

American Cooperage Co., Maurer, N.J.  
Newark Steel Drum Co., Linden, N. J.  
Newman Tallow & Soap Machinery Co.,  
1051 W. 35th St., Chicago See page 44.

**BARRELS (Wooden)**

Allied Barrel Co., Oil City, Pa.  
American Barrel Co., 205 Bridge St.,  
Salem, Mass.  
American Cooperage Co., Maurer, N.J.  
Atlantic Tank & Barrel Corp.,  
North Bergen, N. J.  
Colwell Cooperage Co., 245 Broadway, N.Y.  
J. D. Hollingshead Co., 612 N. Michigan Ave.,  
Chicago  
Louisville Cooperage Co., Louisville, Ky.  
Michel Cooperage Co., Sandusky, O.  
Weinrick Cooperage Co., Burlington, Iowa  
Western Cooperage Co., Portland, Oregon

**BARREL TILTERS**

Economy Eng. Co., 2651 W. Van Buren St.,  
Chicago  
Schwenck Safety Device Corp.,  
27 Water St., N.Y.

**BATH SALT COLORS**

(see also Essential Oils)

A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
Interstate Color Co., 5 Beekman St., N.Y.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Pylam Products Co., 799 Greenwich St., N.Y.  
See page 54.  
Sandoz Chem. Wks. Inc., 61 Van Dam St., N.Y.

**BATH SALTS**

Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Jansen Soap & Chemical Co.,  
324 Leavenworth St., San Francisco, Cal.  
Lightfoot-Schultz Co., 1412 Park Ave.,  
Hoboken, N. J.

**BATH SALTS (Cont'd)**

Geo. A. Schmidt Co., 236 W. North Ave., Chgo.  
 Solvay Sales Corp., 61 Broadway, N.Y.  
 (Unperfumed) See pages 60, 61.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago  
 Hoboken, N. J.

**BAY OIL (see ESSENTIAL OILS)****BAY RUM**

P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
**Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.**  
 See inside front cover, 33.  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Chas. L. Huisking & Co., 155 Varick St., N.Y.  
 Lanman & Kemp-Barclay Co.,  
 135 Water St., N.Y.  
 McKesson & Robbins, 79 Cliff St., N.Y.  
 Norda, Inc., 601 W. 26th St., N.Y.  
**Ungerer & Co., 13 W. 20th St., N.Y.**  
 See page facing inside front cover, 65.

**BEEES WAX**

Balfour, Guthrie & Co., Ltd. 67 Wall St., N.Y.  
 Cantol Wax Co., Bloomington, Ind.  
 T. G. Cooper & Co., 47 N. 2nd St., Phila.  
 William H. Dey & Co., 11 Water St., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Koster-Keunen, Sayville, L. I., N.Y.  
 Theodore Leonhard Wax Co., Haledon,  
 Paterson, N. J.  
 Muench-Kreuzer Candle Co., Syracuse, N.Y.  
 Neumann-Buslee & Wolfe, 224 W. Huron St.,  
 Chicago  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
 Frank G. Ross Co., 79 Wall St., N.Y.  
 Strohmeier & Arpe Co., 139 Franklin St., N.Y.  
 Will & Baumer Candle Co., Syracuse, N.Y.

**BELLOWS, INSECT POWDER**

Acmeline, Inc., Traverse City, Mich.  
 Feeny Mfg. Co., Muncie, Ind.  
 Thomas W. Houchin Co., 9-15 McPherson Pl.,  
 Jersey City, N. J.  
 Lowell Sprayer Co., Lowell, Mich.

**BENTONITE**

American Colloid Co., 363 W. Superior St.,  
 Chicago See page 11.  
 Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
 Hammill & Gillespie, 225 Broadway, N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 National Sales Corp., 31 E. 13th St., Cinn.  
 Owyhee Chemical Products Co.,  
 300 W. Adams St., Chicago  
 Paper Makers Chemical Corp.,  
 Kalamazoo, Mich.  
 R. F. Revson Co., 91—7th Ave., N.Y.  
 L. A. Salomon & Bro., 216 Pearl St., N.Y.  
 Silica Products Co., 700 Baltimore Ave.,  
 Kansas City, Mo.  
 Tamms Silica Co., 228 N. La Salle St., Chicago  
 Whittaker, Clark & Daniels, 246 Front St., N.Y.  
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

**BENZALDEHYDE**

van Ameringen-Haebler, Inc.,  
 315—4th Ave., N.Y. See pages 12, 13.  
 Dodge & Oleott Co., 180 Varick St., N.Y.  
**Dow Chemical Co., Midland, Mich.,** See page 27.  
 P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
**E. I. du Pont de Nemours Co., Inc.,**  
 Wilmington, Del. See page 4.  
 Felton Chemical Co., 603 Johnson Ave., Bklyn.  
 See page 30.  
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
 Heyden Chem. Co., 50 Union Sq., N.Y.  
**Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.**  
 See inside front cover, 33.  
 Magnuso, Mabee & Reynard, 32 Cliff St., N.Y.  
 Monsanto Chemical Works, 1724 S. 2nd St.,  
 St. Louis  
**Solvay Sales Corp., 61 Broadway, N.Y.**  
 See pages 60, 61.  
**Ungerer & Co., 13 W. 20th St., N.Y.**  
 See page facing inside front cover, 65.  
 Van Dyk & Co., 57 Wilkinson Ave.,  
 Jersey City, N. J.  
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

**BENZENE (Benzol)**

**Barrett Co., 40 Rector St., N.Y.** See page 18.  
 S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh  
 Wm. Cooper & Nephews, 1909 Clifton Ave.,  
 Chicago  
 Hydrocarbon Products, 117 Liberty St., N.Y.  
 William E. Jordan & Bro., 2590 Atlantic Ave.,  
 Brooklyn  
**Koppers Prods. Co., Koppers Bldg.,**  
 Pittsburgh, Pa. See page 41.  
 Neville Co., Pittsburgh

**BERGAMOT OIL (see ESSENTIAL OILS)****BLEACHING AGENTS (Chemical)**

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 Buffalo Electro Chem. Co.,  
 River Rd. & Sawyer Ave., Buffalo, N.Y.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.  
**Hooker Electrochemical Co.,**  
 60 E. 42nd St., N.Y. See page 36.  
 Industrial Chem. Sales Co., 230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Mathieson Alkali Works, 60 E. 42nd St., N.Y.  
**Niagara Alkali Co., 9 E. 41st St., N.Y.**  
 See page 46.  
**Rohm & Haas Co., Inc.,**  
 222 W. Washington Sq., Phila., See page 57.  
**Solvay Sales Corp., 61 Broadway, N.Y.**  
 See pages 60, 61.  
 Joseph Turner & Co., 500—5th Ave., N.Y.  
**Warner Chem. Co., Chrysler Bldg., N.Y.**  
 See page 66.  
 Jacques Wolf & Co., Passaic, N. J.

**BLEACHING POWDER (Chloride of Lime)**

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.  
**Hooker Electrochemical Co.,**  
 60 E. 42nd St., N.Y. See page 36.

**BLEACHING POWDER (Cont'd)**

- Innis, Speiden & Co., 117 Liberty St., N.Y.  
 See page 40.  
 Mathieson Alkali Works, 60 E. 42nd St., N.Y.  
 Niagara Alkali Co., 9 E. 41st St., N.Y.  
 See page 46.  
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.  
 Truempy, Faesy & Besthoff, Inc.,  
 22 E. 40th St., N.Y.  
 Joseph Turner & Co., 500—5th Ave., N.Y.

**BLOCK HOLDERS (see HOLDERS, DEODORIZING BLOCK)****BLOWERS for POWDER INSECTICIDES (see BELLOWS)****BLOWERS, ELECTRIC (see SPRAYERS, ELECTRIC)****BLUING (see LAUNDRY BLUE)****BOILER COMPOUNDS**

- Bird-Archer Co., 2nd, Bristol & N. American  
 Sts., Phila.  
 Eagle Soap Corp., Huntington, Ind.  
 See page 28.  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Oil-Kraft, Inc., 3330 Beekman St., Cincinnati  
 Palmer Prods. Inc., Waukesha, Wisc.  
 John Sunshine Chem. Co., 604 W. Lake St.,  
 Chicago  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago

**BOIS de ROSE OIL (see ESSENTIAL OILS)****BORAX**

- American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 American Potash & Chem. Corp.,  
 233 Broadway, N.Y.  
 Borax Union, 420 Lexington Ave., N.Y.  
 General Chem. Co., 40 Rector St., N.Y.  
 See page 32.  
 Grasselli Chemical Co., 1300 Guardian Bldg.,  
 Cleveland  
 See page 35.  
 Harshaw Chemical Co., 1945 E. 97th St.,  
 Cleveland  
 Innis, Speiden & Co., 117 Liberty St., N.Y.  
 See page 40.  
 Pacific Coast Borax Co., 51 Madison Ave., N.Y.  
 Paper Makers Chemical Corp.,  
 Kalamazoo, Mich.  
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.  
 Wishnick-Tumpeier, Inc., 253 Front St., N.Y.

**BOTTLES**

- American Bottle Co., Toledo, O.  
 Capstan Glass Co., Connellsville, Pa.  
 Graham Glass Co., Evansville, Ind.  
 Kimble Glass Co., Vineland, N. J.  
 Maryland Glass Corp., Baltimore, Md.  
 Millville Bottle Wks., Millville, N. J.  
 Owens Illinois Glass Co., Toledo, O.  
 F. E. Reed Glass Co., 860 Maple St.,  
 Rochester, N.Y.  
 Root Glass Co., Terre Haute, Ind.  
 Ruth Glass Co., Conshohocken, Pa.  
 Tygart Valley Glass Co., Washington, Pa.  
 T. C. Wheaton Co., Millville, N. J.

**BOTTLE FILLING MACHINERY (see FILLING MACHINERY, BOTTLES)****BOTTLE WASHERS (see WASHING MACHINERY, BOTTLES)****BOX LINERS (see BAG LINERS)****BOXES (Corrugated and/or Fibre)**

- Brooklyn Fibre Syndicate,  
 Decatur St. & Irving Ave., Brooklyn  
 Cambridge Paper Box Co., 196 Broadway,  
 Cambridge, Mass.  
 Consolidated Paper Co., Monroe, Mich.  
 Container Corp. of America,  
 111 W. Washington St., Chicago  
 Robert Gair Co., 420 Lexington Ave., N. Y.  
 Hinde & Dauch Paper Co., Sandusky, O.  
 Interstate Corrugated Box Co., 75 Front St.,  
 Brooklyn  
 F. J. Kress Box Co., 2930 Liberty Ave.,  
 Pittsburgh  
 River Raisin Paper Co., Monroe, Mich.

**BOXES (Fancy Paper)**

- Alderman-Fairchild Co., 367 Orchard St.,  
 Rochester, N.Y.  
 Baxter Paper Co., Brunswick, Maine  
 F. N. Burt Co., Ltd., 540 Seneca St.,  
 Buffalo, N.Y.  
 C. J. Fox Co., 236 Abron St., Providence, R. I.  
 Foxon Paper Co., 230 West Park St.,  
 Providence, R. I.  
 Robert Gair Co., 420 Lexington Ave., N.Y.  
 R. R. Heywood, Inc.,  
 26th St. & 9th Ave., N.Y.  
 R. J. Kittredge Co., 812 W. Superior St.,  
 Chicago  
 Pictorial Package Co., Aurora, Ill.  
 Potomac Lithograph Mfg. Co.,  
 Washington, D. C.  
 W. C. Ritchie & Co., 400 S. Green St., Chicago  
 Robertson Paper Box Co., Montville, Conn.  
 Geo. Schmitt & Co., Grand & Florence Sts.,  
 Brooklyn  
 U. S. Printing & Lithographing Co.,  
 Norwood, Cincinnati

**BOXES (Fancy Wooden)**

- Pilliod Cabinet Co., Swanton, O.

**BROKERS (Chemicals)**

- S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh  
 Dickerson Co., Drexel Bldg., Phila.  
 Otto A. C. Hagen Co., Public Ledger Bldg.,  
 Phila.  
 Chas. L. Huisking & Co., 155 Varick St., N.Y.  
 Leo Pasternak, Inc., 110 William St., N.Y.  
 George Uhe, Inc., 11 Cliff St., N.Y.  
 Wilson Brokerage, Inc.,  
 Produce Exchange, N.Y.

**BROKERS (Oils and Fats)**

- C. R. Antz & Co., 25 Beaver St., N.Y.  
 Irving R. Boodv Co., 99 Wall St., N.Y.  
 Davidson Commission Co.,  
 175 W. Jackson Blvd., Chicago  
 Frey & Horgan, 17 State St., N.Y.  
 John W. Hall, 327 S. La Salle St., Chicago  
 Otto A. C. Hagen Co., Public Ledger Bldg.,  
 Phila.  
 Hentz & Co., 60 Beaver St., N.Y.

**BROKERS (Oils and Fats) (Cont'd)**

Chas. Hollingshed Co.,  
Produce Exchange, N.Y.  
Horner Commission Co., 15 William St., N.Y.  
Miller & Co., 2401 Chestnut St., Philadelphia  
Rachin, Snow & Cleaver, 15 William St., N.Y.

See page 55.

Rayner & Stonington, Inc., 79 Wall St., N.Y.  
J. H. Redding Co., 17 Battery Pl., N.Y.  
Roesling, Monroe & Co., 25 Broadway, N.Y.  
Sterne & Son Co., Produce Exchange, N.Y.  
United Africa Co., 67 Wall St., N.Y.  
Wm. M. Ware & Co., 88 Broad St., Boston  
H. L. Webster & Co., 111 W. Washington St.,  
Chicago

Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.

G. A. Wharry & Co., 15 Moore St., N.Y.  
Wilbur-Ellis Co., 17 Battery Pl., N.Y.

See inside back cover.

J. R. Wilder, Produce Exchange, N.Y.  
Wilson Brokerage, Inc.,  
Produce Exchange, N.Y.

**BROOMS**

Alabama Broom & Mattress Co.,  
Huntsville, Ala.  
Burdett-Rose Mfg. Co.,  
6100 Independence Rd., Kansas, Mo.  
Chattanooga Broom & Mop Co.,  
Chattanooga, Tenn.  
Detroit Quality Brush Mfg. Co.,  
5937 Michigan Ave., Detroit  
Eagle Woodenware Co., Hamilton, O.  
Kendallville Brush & Broom Co.,  
Kendallville, Ind.  
Tate Mfg. Co., 67 Sudbury St., Boston, Mass.  
M. J. Toohy & Co., Fall River, Mass.

**BRUSHES**

American Standard Mfg. Co.,  
2509 Lime St., Chicago  
Auburn Brush Co., Columbia, Pa.  
Burdett-Rose Mfg. Co.,  
6100 Independence Rd., Kansas City, Mo.  
Detroit Quality Brush Mfg. Co.,  
5937 Michigan Ave., Detroit  
Jap-Art Brush Co., 154 Nassau St., N.Y.  
(Importers)  
Illinois Brush Mfg. Co.,  
3316 Ogden Ave., Chicago  
W. E. Kautenberg Co., P. O. Box 255,  
Freeport, Ill.  
Kendallville Brush & Broom Co.,  
Kendallville, Ind.  
Marcus Brush Co., 233 Broadway, N.Y.  
National Brush Co., Aurora, Ill.  
New Jersey Brush Mfg. Co., Newton, N. J.  
Opie Brush Co., Kansas City, Mo.  
Ox Fibre Brush Co., Frederick, Md.  
Palmer Prods., Inc., Waukesha, Wisc.  
Pioneer Mfg. Co., Cleveland, O.  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Sanitary Mfg. Co., 926 Ft. Wayne Ave.,  
Indianapolis, Ind.  
Silver-Chamberlin Co., Clayton, N. J.  
Sullivan Brush Co., Terre Haute, Ind.  
Tate Mfg. Co., 67 Sudbury St., Boston, Mass.

**CAJUPUT OIL (see ESSENTIAL OILS)****CALCIUM STEARATE (see STEARATES)****CAMPOR OIL, SASSAFRASSY (see ESSENTIAL OILS)****CAMPOR OIL, WHITE (see ESSENTIAL OILS)****CAN FILLING MACHINERY (see FILLING MACHINERY, CANS)****CANANGA OIL (see ESSENTIAL OILS)****CANDELILLA WAX (see WAXES)****CANS (Decorated Tin)**

American Can Co., 230 Park Ave., N.Y.  
J. L. Clark Mfg. Co., Rockford, Ill.  
Columbia Can Co., 5221 Natural Bridge Ave.,  
St. Louis  
Continental Can Co., Inc., 100 E. 42nd St., N.Y.  
See page 24.

Giles Can Co., 2444 W. 16th St., Chicago  
Heekin Can Co., Cincinnati  
Metal Package Corp., 110 E. 42nd St., N.Y.  
W. F. Robertson Steel & Iron Co.,  
Springfield, O.  
St. Louis Can Co., 904 S. 14th St., St. Louis  
Tin Decorating Co., of Baltimore, Baltimore  
Wilkes-Barre Can Co., Kingston, Pa.  
William Vogel & Bros., Inc.,  
37 S. 9th St., Brooklyn

**CANS (Fibre or Paper)**

American Can Co., 230 Park Ave., N.Y.  
Cambridge Paper Box Co., 196 Broadway,  
Cambridge, Mass.  
Canister Co., Phillipsburg, N. J.  
Cin-Made Corp.,  
294 Eggleston Ave., Cincinnati  
Cleveland Container Co., 10630 Berea Rd.,  
Cleveland  
Cross Paper Products Co.,  
2595 Third Ave., N.Y.  
Fonda Container Co., 41 Park Row, N.Y.  
Master Package Corp., Owen, Wisc.  
Metal Pkg. Corp., 110 E. 42nd St., N.Y.  
Midwest Paper Container Co., 707 N. 3rd St.,  
Minneapolis  
National Paper Can Co., Cudahy, Wis.  
R. C. Can Co., 121 Chambers St., St. Louis  
W. C. Ritchie & Co., 8855 S. Baltimore Ave.,  
Chicago  
Sefton National Fibre Can Co.,  
3275 Big Bend Bldg., St. Louis

**CANS (Plain Tin)**

American Can Co., 230 Park Ave., N.Y.  
J. L. Clark Mfg. Co., Rockford, Ill.  
Columbia Can Co., 5221 Natural Bridge Ave.,  
St. Louis  
Continental Can Co., Inc., 100 E. 42nd St., N.Y.  
See page 24.  
Fein's Tin Can Co., 284 Furman St., Brooklyn  
Giles Can Co., 2444 W. 16th St., Chicago  
Heekin Can Co., Cincinnati  
Metal Pkg. Corp., 110 E. 42nd St., N.Y.  
St. Louis Can Co., 904 S. 14th St., St. Louis  
Tin Decorating Co. of Baltimore, Baltimore  
William Vogel & Bros., Inc., 37 S. 9th St.,  
Bklyn.

**CANS (Sifter Top)**

American Can Co., 230 Park Ave., N.Y.  
 Anchor Cap & Closure Corp., 22 Queens St.,  
 Long Island City, N. Y.  
 Cambridge Paper Box Co., 196 Broadway,  
 Cambridge, Mass.  
 Cleveland Container Co., 10630 Berea Rd.,  
 Cleveland  
 Cin-Made Corp.,  
 294 Eggleston Ave., Cincinnati  
**Continental Can Co., Inc., 100 E. 42nd St., N.Y.**  
 See page 24.

Giles Can Co., 2444 W. 16th St., Chicago  
 Metal Pkg. Corp., 110 E. 42nd St., N.Y.  
 R. C. Can Co., 121 Chambers St., St. Louis  
 Sefton National Fibre Can Co.,  
 3225 Big Bend Bldg., St. Louis  
 Tin Decorating Co., of Baltimore,  
 Boston St. & Linwood Ave., Baltimore, Md.  
 William Vogel & Bro., Inc., 37 S. 9th St.,  
 Bklyn.

**CANS (Steel)**

American Can Co., 230 Park Ave., N.Y.  
 Central Can Co., 2415 W. 19th St., Chicago  
 Fein's Tin Can Co., 284 Furman St., Brooklyn  
 Geuder, Paeschke & Frey Co., Milwaukee  
 Niles Steel Prods. Co., 465 Walnut St.,  
 Niles, Ohio  
 Ohio Pail Co., Middlefield, Ohio  
 John Trageser Steam Copper Works,  
 Grand Ave., Maspeth, L. I., N.Y.  
 Vulcan Stamping & Mfg. Co.,  
 4036 W. Lake St., Chicago  
 Wilson & Bennett Mfg. Co.,  
 6532 Menard St., Chicago

**CAPPING MACHINERY**

Anchor Cap & Closure Corp., 22 Queens St.,  
 Long Island City, N.Y.  
 Consolidated Packaging Machinery Corp.,  
 1400 West Ave., Buffalo, N.Y.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Ferdinand Gutmann & Co., 15th Ave. & 37th St.,  
 Bklyn.  
 R. G. Haskins Co., 4642 W. Fulton St., Chicago  
 Karl Kiefer Machine Co., Cincinnati, Ohio  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.

Phoenix Metal Cap Co.,  
 2444 W. 16th St., Chicago  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.  
 C. T. Small Mfg. Co., 1204 Ferguson Ave.,  
 St. Louis  
**Stein-Brill Corp., 183 Varick St., N.Y. (Used)**  
 See page 63.  
 Williams Sealing Corp., Decatur, Ill.

**CAPPING MATERIALS**

Du Pont Cellophane Co., 2 Park Ave., N.Y.  
 Ferdinand Gutmann & Co.,  
 Bush Terminal Bldg. #19, Bklyn.  
 Sylvania Industrial Corp., Chanin Bldg., N.Y.  
 Paul Troeder, Belleville, N. J.

**CAPS (Composition)**

Anchor Cap & Closure Corp., 22 Queens St.,  
 Long Island City, N.Y.

Armstrong Cork & Insulation Co.,  
 Lancaster, Pa.  
 Bakelite Corp., Bound Brook, N. J.  
 General Plastics, Inc., N. Tonawanda, N.Y.  
 Resinox Corp., Terre Haute, Ind.  
 Toledo Synthetic Prods Co., Toledo, O.

**CAPS (Metal)**

Aluminum Co. of America, Gulf Bldg.,  
 Pittsburgh  
 Anchor Cap & Closure Corp., 22 Queens St.,  
 Long Island City, N.Y.  
 Armstrong Cork & Insulation Co.,  
 Lancaster, Pa.  
 Closure Service Co., Toledo, O.  
 Crown Cork & Seal Co., Eastern Ave. &  
 Kresson St., Baltimore  
 Ferdinand Gutmann & Co.,  
 14th Ave. & 37th St., Bklyn.  
 Metal Pkg. Corp., 110 E. 42nd St., N.Y.  
 National Seal Co., 14th Ave. & 37th St., Bklyn.  
 Phoenix Metal Cap Co.,  
 2444 W. 16th St., Chicago  
 Tin Decorating Co. of Baltimore,  
 Boston St. & Linwood Ave., Baltimore, Md.  
 Williams Sealing Corp., Decatur, Ill.  
 William Vogel & Bros., Inc., 37 S. 9th St.,  
 Bklyn.

**CARAWAY OIL (see ESSENTIAL OILS)****CARBOLIC ACID, CRUDE (see TAR ACID)****CARBON BISULFIDE**

(see also Dealers)

Dow Chemical Co., Midland, Mich., See page 27.  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
**Grasselli Chemical Co., 1800 Guardian Bldg.,**  
**Cleveland** See page 35.  
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.  
**Warner Chemical Co., 405 Lexington Ave., N.Y.**  
 See page 66.

**CARBON TETRACHLORIDE**

(see also Dealers)

J. T. Baker Chemical Co., Phillipsburg, N. J.  
 Brown Co., Portland, Me.  
 Dow Chemical Co., Midland, Mich., See page 27.  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
**Grasselli Chemical Co., 1800 Guardian Bldg.,**  
**Cleveland** See page 35.  
 Merck & Co., Rahway, N. J.  
 Niagara Smelting Corp., Niagara Falls, N.Y.  
 Stauffer Chem. Co., 420 Lexington Ave., N.Y.  
**Warner Chemical Co., 405 Lexington Ave., N.Y.**  
 See page 66.

**CARNAUBA WAX (see WAXES)****CARTON LINING MACHINES (see LINING MACHINERY)****CARTON SEALING MACHINERY (see SEALING MACHINERY)**



**CARTONING MACHINERY**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.

J. L. Ferguson Co., Joliet, Ill.  
R. A. Jones & Co., Cincinnati, O.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)

See page 44.

Pneumatic Scale Corp., Norfolk Downs, Mass.  
See pages 48, 49.

F. B. Redington Co., 112 S. Sangamon St.,  
Chicago

Stein-Brill Corp., 183 Varick St., N.Y. (Used)  
See page 63.

Stokes & Smith Co., Summerdale, Phila., Pa.  
See page 64.

Triangle Package Machinery Co.,  
910 N. Spaulding Ave., Chicago

**CARTONS (Display and Knock Down)**

Alderman-Fairchild Co., Rochester, N.Y.  
F. N. Burt Co., 540 Seneca St., Buffalo, N.Y.  
Consolidated Paper Co., Monroe, Mich.  
Robert Gair Co., 420 Lexington Ave., N.Y.  
Nevins-Church Co., 250 Park Ave., N.Y.  
New England Card & Paper Co.,  
Springfield, Mass.  
Pictorial Package Co., Aurora, Ill.  
Randolph Box & Label Co., 843 W. Van  
Buren St., Chicago  
W. C. Ritchie & Co., 8855 S. Baltimore Ave.,  
Chicago  
Robertson Paper Box Co., Inc., Montville,  
Conn.  
George Schmitt & Co., Grand & Florence Sts.,  
Bklyn.  
U. S. Printing & Lithographing Co.,  
Cincinnati, O.

**CASE SEALING MACHINERY (see SEAL-  
ING MACHINERY)****CASEIN**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Innis-Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
Jungmann & Co., 157 Chambers St., N.Y.  
Land-o-Lakes Creameries, Minneapolis  
National Casein Co., 603 W. 80th St., Chicago  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.

**CASES (Fibre) see BOXES****CASES (Corrugated) see BOXES****CASTILE SOAP**

Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.

Cincinnati Soap Co., Cincinnati  
Conti Soap Distributors, 16 Atlantic Ave.,  
Brooklyn, N.Y.  
Green Oil Soap Co., 166 N. Curtis St., Chicago  
Hochwald Chem. Co., 30 Bluxome St.,  
San Francisco  
Holbrook Mfg. Co., 18th St., Jersey City, N. J.  
Kranich Soap Co., 54 Richards St., Brooklyn

Leghorn Trading Co., 155 E. 44th St., N.Y.

See page 42.

Lockwood-Brackett Co., Waltham Station,  
Boston  
Los Angeles Soap Co., Los Angeles, Calif.  
Geo. E. Marsh Co., 393 Chestnut, Lynn, Mass.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Newell Guttradt Co., 350 Fremont St.,  
San Francisco, Calif.  
Soaps-Perfumes, Ltd., 84 Front St.,  
East Toronto  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.  
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**CASTILE SOAP, LIQUID**

Antiseptol Liquid Soap Co.,  
5424 North West Highway, Chicago  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Davies-Young Soap Co., Dayton, O.  
See page 25.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Fischer's Surfa-Saver, Inc., Bond Hill,  
Cincinnati  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
James Good, Inc., Kensington, Phila.  
See page 34.  
Hysan Products Co., 2560 Armitage Ave.,  
Chicago  
Kranich Soap Co., 54 Richards St., Brooklyn  
Palmer Prods. Inc., Waukesha, Wis.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
U. S. Sanitary Spec. Corp., 435 S. Western Ave.,  
Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
Allen B. Wrisley Co., 6801 W. 65th St.,  
Chicago

**CASSIA OIL (see ESSENTIAL OILS)****CASTOR OIL**

(see also Dealers)

Archer-Daniels-Midland Co., Minneapolis  
Baker Castor Oil Co., 120 Broadway, N.Y.  
Balfour, Guthrie & Co., 67 Wall St., N.Y.  
Otto A. C. Hagen Co., 929 Ledger Bldg.,  
Phila.  
National Oil Products Co., Harrison, N. J.  
Spencer Kellogg & Sons, Buffalo, N.Y.  
Tunley & Co., 31 Water St., N.Y.  
United Africa Co., 67 Wall St., N.Y.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y. (Dealers)

**CATTLE DIPS (Also Sheep Dips)**

An-Fo Mfg. Co., 3129 Elmwood Ave.,  
Oakland, Cal.  
Baird & McGuire, Holbrook, Mass.  
See pages 16, 17.  
Chemical Compounding Corp.,  
262 Huron St., Bklyn.



**CATTLE DIPS (Cont'd)**

- Clifton Chem. Co., 247 Front St., N.Y.  
See page 21.
- Chem. Supply Co., 2450 Canal Rd., Cleveland
- Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.
- General Chem. Co., 40 Rector St., N.Y.  
See page 32.
- James Good, Inc., Kensington, Phila.  
See page 34.
- Goulard & Olena, 140 Liberty St., N.Y.
- Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco
- Hysan Prods. Co., 2560 Armitage Ave., Chicago
- William E. Jordan & Bros., 2590 Atlantic Ave.,  
Brooklyn
- Kay Chemical Co., 329 Ringold St.,  
Baltimore, Md.
- Koppers Prods. Co., Koppers Bldg.,  
Pittsburgh, Pa. See page 41.
- Marshall Prods., Inc., 806 N. 1st St., St. Louis
- McLaughlin, Gormley King Co.,  
Minneapolis, Minn.
- North Coast Soap & Chem. Wks., Seattle, Wash.
- Palmer Prods., Inc., Waukesha, Wis.
- Peck's Prod. Co., 522-40 N. 2nd St., St. Louis
- Shores Co., Cedar Rapids, Ia.
- U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago
- Robert C. White Co., Falls of Schuylkill, Phila.
- White Tar Co., Kearny, N. J. See page 41.

**CATTLE SPRAY BASE (see PETROLEUM BASES)****CATTLE SPRAYS**

- An-Fo Mfg. Co., 3129 Elmwood Ave.,  
Oakland, Cal.
- Baird & McGuire, Inc., Holbrook, Mass.  
See pages 16, 17.
- Barrett Co., 40 Rector St., N.Y. See page 18.
- Chemical Compounding Corp., 262 Hurson St.,  
Brooklyn
- Chemical Supply Co., 2450 Canal Rd., Cleveland
- Clifton Chem. Co., 247 Front St., N.Y.  
See page 21.
- Eagle Soap Corp., Huntington, Ind.  
See page 28.
- B. R. Elk & Co., Garfield, N.J.
- Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.
- Elkay Prods. Corp., 542-1st Ave., N.Y.
- James Good, Inc., Kensington, Phila.  
See page 34.
- Goulard & Olena, 140 Liberty St., N.Y.
- Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco
- R. M. Hollingshead Co., 840 Cooper St.,  
Camden, N. J.
- Hysan Prods. Co., 2560 Armitage Ave., Chicago
- Kay Chemical Co., 329 Ringold St.,  
Baltimore, Md.
- K. B. Chemical Co., 276 N. Main St.,  
Providence, R. I.
- Koppers Prods. Co., Koppers Bldg.,  
Pittsburgh, Pa. See page 41.
- Mechling Bros. Chemical Co.,  
Line St. & Coopers Creek, Camden, N. J.
- Oil-Craft, Inc., 3330 Beekman St., Cincinnati
- Palmer Products, Inc., Waukesha, Wis.
- Peck's Prod. Co., 522-40 N. 2nd St., St. Louis

- Sherwin-Williams Co., 601 Canal Rd.,  
Cleveland, O.
- Sherwood Petroleum Co., Bush Terminal Bldg.,  
No. 1, Bklyn.
- Shores Co., Cedar Rapids, Ia.
- U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago
- Robert C. White Co., Falls of Schuylkill, Phila.
- White Tar Co., Kearny, N. J. See page 41.

**CAUSTIC POTASH**

(see also Dealers)

- American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.
- E. I. Du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.
- Grasselli Chem. Co., 1300 Guardian Bldg.,  
Cleveland See page 35.
- Harshaw Chem. Co., Cleveland
- Inn's, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.
- Niagara Alkali Co., 15 E. 41st St., N.Y. (Mfrs.)  
See page 46.
- E. M. Sergeant Pulp & Chemical Co.,  
350-5th Ave., N.Y.
- Solvay Sales Corp., 61 Broadway, N.Y.  
(Mfrs. liquid) See pages 60, 61.
- Truempy, Faesey & Besthoff,  
22 E. 40th St., N.Y.

**CAUSTIC SODA**

(see also Dealers)

- American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.
- Belle Alkali Co., Belle, W. Va.
- Brown Company, Portland, Me.
- Champion Fibre Co., Canton, N. C.
- Columbia Alkali Co., 350-5th Ave., N.Y.  
See page 22.
- Diamond Alkali Co., First Nat'l Bk. Bldg.,  
Pittsburgh
- Dow Chemical Co., Midland, Mich. See page 27.
- Great Western Electrochemical Co.,  
San Francisco
- Hooker Electrochemical Co.,  
60 E. 42nd St., N.Y. See page 36.
- Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.
- Kimberley-Clark Paper Co., Neenah, Wis.
- Mathieson Alkali Works, 250 Park Ave., N.Y.
- Michigan Alkali Co., 60 E. 42nd St., N.Y.
- Michigan Electrochemical Co.,  
Menominee, Mich.
- Niagara Alkali Co., 9 E. 41st St., N. Y.  
See page 46.
- Niagara Smelting Corp., Niagara Falls, N.Y.
- Oxford Paper Co., White Mountains, N. H.
- Pennsylvania Salt Mfg. Co.,  
Widener Bldg., Phila.
- Solvay Sales Corp., 61 Broadway, N.Y.  
See pages 60, 61.
- Stauffer Chem. Co., 420 Lexington Ave., N.Y.
- Warner Chemical Co., 405 Lexington Ave., N.Y.  
See page 66.

**CEDAR LEAF OIL (see ESSENTIAL OILS)****CEDARWOOD OIL (see ESSENTIAL OILS)**

**CERESIN WAX (see WAXES)****CHALK (Calcium Carbonate)**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
H. J. Baker & Bro., 271 Madison Ave., N.Y.  
Binney & Smith Co., 41 E. 42nd St., N.Y.  
Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
E. Fougere & Co., 41 Maiden Lane, N.Y.  
Goris & Arnstein, 37th & Racine Ave., Chicago  
Hammill & Gillespie, 225 Broadway, N.Y.  
Industrial Chem. Sales Co., 230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Jungmann & Co., 157 Chambers St., N.Y.  
L. A. Salomon & Bro., 216 Pearl St., N.Y.  
Tamms Silica Co., 228 N. La Salle St., Chicago  
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

**CHAMOIS**

Addison Sponge Co., 118 E. Court St.,  
Cincinnati  
Allied Industrial Prods. Co.,  
17 N. Elizabeth St., Chicago  
Amer. Sponge & Chamois Co.,  
23 Beekman St., N.Y.  
Atlas Sponge Co., 291 Church St., N.Y.  
Jos. Niehaus Co., 341 W. 4th St., Cincinnati  
James H. Rhodes & Co.,  
157 W. Austin Ave., Chicago  
Schroeder & Tremayne, 500 N. Com'l St.,  
St. Louis

**CHILLING ROLLS**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
William Garrigue & Co., 9 S. Clinton St.,  
Chicago  
Houchin Machinery Co., Hawthorne, N. J.  
See page 37.  
Huber Machine Co., 259—46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 W. Broadway, N.Y.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Proctor & Schwartz, 7th St. & Tabor Rd.,  
Philadelphia See page 53.  
C. G. Sargent's Sons Corp., Graniteville, Mass.  
See page 58.  
Stein-Brill Corp., 183 Varick St., N.Y. (Used)  
See page 63.  
F. J. Stokes Machine Co., 5974 E. Tabor Rd.,  
Phila.

**CHINA CLAY (see CLAYS)****CHIPPERS**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Houchin Machinery Co., Hawthorne, N. J.  
See page 37.  
Huber Machine Co., 259—46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 W. Broadway, N.Y.

Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)

Stein-Brill Corp., 183 Varick St., N.Y. (Used)  
See page 63.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

**CHIP SOAPS (Including Flakes)**

Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Cincinnati Soap Co., 7th & Elm Sts., Cincinnati  
Colgate-Palmolive-Peet Co., Jersey City, N. J.  
Du Bois Soap Co., Cincinnati, Ohio  
Hewitt Soap Co., Dayton, Ohio  
Holbrook Mfg. Co., 18th St., Jersey City, N. J.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Lever Bros. Co., Cambridge, Mass.  
Los Angeles Soap Co., Los Angeles, Calif.  
National Milling & Chem. Co., Manayunk, Phil.  
National Soap Co., 357 South 25th St.,  
Tacoma, Wash.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Procter & Gamble Co., Cincinnati  
J. T. Robertson Co., 147 Richmond Ave.,  
Syracuse, N. Y.  
Geo. Schmidt Co., 236 W. North Ave.,  
Chicago, Ill.  
Swift & Co., Union Stock Yards, Chicago  
Warren Soap Mfg. Co., 51 Warren St.,  
Cambridge, Mass.  
M. Werk Co., Cincinnati  
Chas. W. Young & Co., Phila.

**CHLORINE**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Diamond Alkali Co., First Nat'l Bk. Bldg.,  
Pittsburgh, Pa.  
Electro Bleaching Gas Co., 9 E. 41st St., N.Y.  
See page 46.  
Grasselli Chem. Co., 1300 Guardian Bldg.,  
Cleveland See page 35.  
Hooker Electrochemical Co.  
60 E. 42nd St., N.Y. See page 36.  
Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
Mathieson Alkali Works, 60 E. 42nd St., N.Y.  
Monsanto Chemical Works, 1724 S. 2nd St.,  
St. Louis  
Niagara Alkali Co., 9 E. 41st St., N.Y.  
See page 46.  
Pennsylvania Salt Mfg. Co., Widener Bldg.,  
Phila.  
Solvay Sales Corp., 61 Broadway, N.Y.  
See pages 60, 61.  
Warner Chemical Co., 405 Lexington Ave., N.Y.  
See page 66.

**CHLORINE DISINFECTANTS (see DISINFECTANTS)****CHLOROFORM**

Barrett Co., 40 Rector St., N.Y. See page 18.  
Brown Company, Portland, Me.  
Dow Chemical Co., Midland, Mich., See page 27.  
E. I. du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.  
Grasselli Chem. Co., 1300 Guardian Bldg.,  
Cleveland See page 35.

**CHLOROFORM (Cont'd)**

- Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Mallinckrodt Chemical Works, St. Louis, Mo.  
Merck & Co., Rahway, N. J.  
Niagara Smelting Corp., Niagara Falls, N.Y.  
Stauffer Chem. Co., 420 Lexington Ave., N.Y.

**CHLOROPHYLL**

- Wm. Benkert & Co., 100 Gold St., N.Y.**  
See page 19.  
Harshaw Chemical Co.,  
1945 E. 97th St., Cleveland  
Interstate Color Co., 5 Beekman St., N.Y.  
Jungmann & Co., 157 Chambers St., N.Y.  
Krembs & Co., 669 W. Ohio St., Chicago  
Merck & Co., Rahway, N. J.  
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
**Pylam Products Co., 799 Greenwich St., N.Y.**  
See page 54.  
Sandoz Chem. Works, Inc., 61 Van Dam St.,  
N.Y.  
Edwin Seebach Co., 912 Broadway, N.Y.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.

**CITRAL (see AROMATIC CHEMICALS)****CITRONELLAL (see AROMATIC CHEMICALS)****CITRONELLA OIL (see ESSENTIAL OILS)****CITRONELLOL (see AROMATIC CHEMICALS)****CLAYS**

- American Colloid Co., 363 W. Superior St., Chicago**  
See page 11.  
Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
E. Fougere & Co., 41 Maiden Lane, N.Y.  
Goris & Arnstein, 37th & Racine Ave., Chgo.  
Hammill & Gillespie, 225 Broadway, N.Y.  
J. M. Huber, Inc., 460 W. 34th St., N.Y.  
Illinois Silica Co., Cairo, Ill.  
Industrial Chem. Sales Co., 230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
International Silica Co., Cairo, Ill.  
National Sales Corp., 33 E. 13th St., Cinn.  
Owyhee Chemical Products Co.,  
300 W. Adams St., Chicago  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Peerless Clay & Mineral Co., Pueblo, Colo.  
L. A. Salomon & Bro., 216 Pearl St., N.Y.  
Tamms Silica Co., 228 N. La Salle St., Chicago  
Whittaker, Clark & Daniels, 246 Front St., N.Y.  
Wishnick-Tumpeier, Inc., 253 Front St., N.Y.

**CLEANING COMPOUNDS (see also WASHING COMPOUNDS)**

- Baird & McGuire, Inc., Holbrook, Mass.**  
See pages 16, 17.

- Baums Castorine Co., 200 Mathew St., Rome, N. Y.**  
**Clifton Chem. Co., 247 Front St., N.Y.**  
See page 21.  
Columbia Soap & Chem. Co., Inc.,  
217-221 Clara St., San Francisco  
Continental Car-Na-Var Corp., Brazil, Ind.  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Crystal Labs., Inc., 21 W. Park Way, N. E.,  
Pittsburgh, Pa.  
**Eagle Soap Corp., Huntington, Ind.**  
See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
See page 31.  
**James Good, Inc., Kensington, Phila.**  
See page 34.  
Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco  
R. M. Hollingshead, 840 Cooper St.,  
Camden, N. J.  
Hull Co., 305 Washington St., Brooklyn  
Hysan Prods. Co., 2509 Armitage Ave., Chicago  
Kemiko Mfg. Co., 193 Murray St.,  
Newark, N. J.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Los Angeles Soap Co., Los Angeles, Calif.  
Marshall Prods., Inc., 806 N. 1st St., St. Louis  
Mechling Bros. Chemical Co., Camden, N. J.  
Nat'l Milling & Chem. Co., Manayunk, Phila.  
National Soap Co., 357 South 25th St.,  
Tacoma, Wash.  
Neveering Mfg. Co., 200 W. 34th St., N.Y.  
North Coast Soap & Chem. Wks.,  
Seattle, Wash.  
Pacific Chem. Co., 1421 N. Main St.,  
Los Angeles  
Palmer Products, Inc., Waukesha, Wis.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Peck's Prod. Co., 522-40 N. 2nd St., St. Louis  
Procter & Gamble Co., Cincinnati  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Sanico Chemical Corp., 611 Broadway, N.Y.  
Selig Co., 336 Marietta St., Atlanta, Ga.  
Solshine Mfg. Co., 17 Caldwell St., Boston  
**Solvay Sales Corp., 61 Broadway, N.Y.**  
See pages 60, 61.  
John T. Stanley Co., 640 W. 30th St., N.Y.  
Stevens Soap Corp., 200 Sullivan St., Bklyn.  
John Sunshine Chem. Co., 604 W. Lake St.,  
Chicago  
United Cleanser Mfg. Co., Cambridge, Mass.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
**White Tar Co., Kearny, N.J.** See page 41.  
Jacques Wolf & Co., Passaic, N. J.

**CLIPS (for Collapsible Tubes) (see also TUBES, COLLAPSIBLE)**

- Acme Clip & Mfg. Co., 426 S. Clinton St., Chicago**  
**George G. Rodgers Co., 183 Varick St., N.Y.**  
See page 63.

**CLOSURES (see CAPS, CORKS, etc.)**

**CLOVE OIL** (see **ESSENTIAL OILS**)**COAL TAR DISINFECTANTS** (see **DISINFECTANTS**)**COCOA BUTTER**

Walter Baker & Co., 159 Franklin St., N.Y.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 Spencer Kellogg & Sons, Buffalo, N.Y.  
 A. N. Stollwerck Co., Camden, N. J.

**COCOANUT OIL**(see also *Brokers and Dealers*)

Atkins, Kroll & Co., 250 California St.,  
 San Francisco  
 Balfour, Guthrie & Co., 67 Wall St., N.Y.  
 Best Foods, Inc., 88 Lexington Ave., N.Y.  
 Capital City Products Co., Columbus, O.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 Franklin Baker Co., 1500 Bloomfield St.,  
 Hoboken, N. J.  
 Spencer Kellogg & Sons, Buffalo, N.Y.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Philippine Mfg. Co., 244 Calle David,  
 Manila, P. I.  
 Procter & Gamble Co., Cincinnati, O.  
 Raclin, Snow & Cleaver, Inc., 15 William St.,  
 N.Y. See page 55.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 Smith-Weihman Co., 15 Moore St., N.Y.  
 See page 59.  
 Wilbur-Ellis Co., 17 Battery Pl., N.Y.  
 See inside back cover.

**COCOANUT OIL SOAPS** (Hard Water Soaps)

Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.  
 Baums Castorine Co., 200 Mathews St.,  
 Rome, N.Y.  
 James Counts Soap Co.,  
 2nd & Washington Aves., St. Louis  
 Creco Co., Creco Bldg., Long Island City, N.Y.  
 Eagle Soap Corp., Huntington, Ind.  
 See page 28.  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.  
 James Good, Inc., Kensington, Phila.  
 See page 34.  
 Harley Soap Co., 2832 E. Pacific St.,  
 Phila., Pa.  
 Hewitt Soap Co., Dayton, Ohio  
 Hochwald Chem. Co., 30 Bluxome St., San  
 Francisco  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Jansen Soap & Chemical Co., 324 Leavenworth  
 St., San Francisco, Cal.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Lightfoot Schultz Co., Hoboken, N. J.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Marshall Prods., Inc., 806 N. 1st St., St. Louis  
 National Milling & Chem. Co.,  
 Manayunk, Phila.  
 National Soap Co., 357 South 25th St.,  
 Tacoma, Wash.  
 Sewell Guttradt Co., 350 Fremont St.,  
 San Francisco, Cal.

North Coast Soap & Chem. Works,  
 Seattle, Wash.  
 Pacific Chem. Co., 1421 N. Main St.,  
 Los Angeles  
 Palmer Prods. Inc., Waukesha, Wisc.  
 Peck's Prod. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Swift & Co., Union Stock Yards, Chicago  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Vliet Soap Co., 638 Monroe St., Brooklyn  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 M. Werk Co., St. Bernard, Cincinnati  
 Allen B. Wisley Co., 6801 W. 65th St.,  
 Chicago, Ill.  
 Chas. W. Young & Co., Phila.

**COLLAPSIBLE TUBES** (see **TUBES, COLLAPSIBLE**)**COLORS** (see **SOAP COLORS, DEODORIZING BLOCK COLORS, ETC.**)**COMPOUND CRESOL SOLUTIONS** (see **CRESOL COMPOUND; DISINFECTANTS, COAL-TAR**)**COMPRESSORS** (Air)

Abbe Engineering Co., 50 Church St., N.Y.  
 Beach-Russ Co., 50 Church St., N.Y.  
 Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 Crowell Mfg. Co., 177 Clifton Pl., Bklyn.  
 De Vilbiss Co., Toledo, O.  
 Fairbanks-Morse & Co.,  
 900 S. Wabash Ave., N.Y.  
 Foster Pump Works, 50 Washington St., Bklyn.  
 Ingersoll-Rand Co., 11 Broadway, N.Y.  
 Nash Engineering Co., South Norwalk, Conn.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used) See page 44.  
 Stein-Brill Corp., 183 Varick St., N.Y. (Used)  
 See page 63.  
 Worthington Pump & Machinery Corp.,  
 115 Broadway, N.Y.

**CONSULTANTS**

Columbus Labs., 33 N. State St., Chicago  
**Entomological Testing Labs.,**  
 114 E. 32nd St., N.Y. See pages 51, 52.  
 Lloyd A. Hall, 1415 W. 37th St., Chicago  
 Illinois Chemical Labs., 1040 N. Halsted St.,  
 Chicago  
 La Wall & Harrison, 214 S. 12th St., Phila.  
 Pease Laboratories, 39 W. 38th St., N.Y.  
 Samuel P. Sadler & Son, 210 S. 13th St., Phila.  
 Seil, Putt & Rusby, 16 E. 34th St., N.Y.  
 Skinner & Sherman, 246 Stuart St., Boston  
 Foster D. Snell, 305 Washington St., Brooklyn  
 Stillwell & Gladding, 130 Cedar St., N.Y.  
 Taub Labs., 115 W. 68th St., N.Y.  
 Wurster & Sanger, 5201 Kenwood Ave., Chgo.

**CONTAINERS, SHIPPING** (see **BOXES**)

**CONVEYORS**

Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 Bailey-Buruss Co., Atlanta, Ga.  
 H. W. Caldwell & Son Co., 2410 W. 18th St.,  
 Chicago

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.

J. H. Day Co., 1144 Harrison Ave., Cincinnati  
 Dow Co., 1025 Franklin St., Louisville, Ky.  
 Wm. Garrigue & Co., 9 S. Clinton St., Chicago  
 B. F. Gump Co., 431 S. Clinton St., Chicago  
**Houchin Machinery Co., Hawthorne, N. J.**

See page 37.  
 Jeffrey Mfg. Co., 924 N. 4th St., Columbus, O.

Karl Kiefer Machine Co., Cincinnati  
 Lancaster Iron Works, Lancaster, Pa.  
 Link-Belt Co., 910 S. Michigan, Chicago

**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)

See page 44.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**

See pages 48, 49.  
**George G. Rodgers Co., 183 Varick St., N.Y.**

See page 63.  
 Standard Conveyor Co., N. St. Paul, Minn.

Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sterns Conveyor Co., Cleveland

F. J. Stokes Machine Co., Tabor Rd., Phila., Pa.

**COPPER SULFATE (Blue Vitriol)**

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.

**Dow Chemical Co., Midland, Mich.** See page 27.

**E. I. du Pont de Nemours & Co.,**  
 Wilmington, Del. See page 4.

**General Chem. Co., 40 Rector St., N.Y.**  
 See page 32.

**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.

Harshaw Chemical Co., 1945 E. 97th St.,  
 Cleveland

**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.

Mechling Bros. Chemical Co., Camden, N. J.

Nichols Copper Co., 25 Broad St., N.Y.

Raritan Copper Wks., Perth Amboy, N. J.

E. M. Sergeant Co., 350—5th Ave., N.Y.

Tennessee Copper Co., 61 Broadway, N.Y.

Trumpy, Faesv & Besthoff, Inc.,  
 22 E. 40th St., N.Y.

**CORKING MACHINERY**

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.

Karl Kiefer Machine Co., Cincinnati

**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.

**Stein-Brill Corp., 183 Varick St., N. Y. (Used)**  
 See page 63.

**CORKS**

Armstrong Cork & Insulation Co.,  
 Lancaster, Pa.

Cork Import Corp., 345 W. 40th St., N.Y.

Dodge Cork Co., Lancaster, Pa.

**CORN OIL**

(see also *Brokers and Dealers*)

American Maize Prods. Co.,  
 41 E. 42nd St., N.Y.

Balfour, Guthrie & Co., Ltd., 67 Wall St., N.Y.  
 Corn Products Refining Co.,  
 17 Battery Pl., N.Y.

Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago

Early & Daniel Co., Ingalls Bldg., Cincinnati

Otto A. C. Hagen Co., 929 Ledger Bldg.,  
 Phila.

Spencer Kellogg & Sons, Buffalo, N.Y.

**Raclin, Snow & Cleaver, Inc., 15 William St.,**  
 N.Y. See page 55.

J. H. Redding Co., 17 Battery Pl., N.Y.

Staley Sales Corp., Decatur, Ill.

**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**  
 See inside back cover.

Woolner & Co., Peoria, Ill.

**COSMETICS (Compacts, Lipsticks, etc.)**

Amer. Perfumers Labs., 151 W. 19th St., N.Y.

Luxor, Ltd., 1355 W. 31st St., Chicago

Oxzyrn Co., 154—11th Ave., N.Y.

Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago

Julius Schmid, Inc., 423 W. 55th St., N.Y.

Shores Co., Cedar Rapids, Ia.

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**COTTONSEED FATTY ACIDS (and**

**Soapstock)**

(see also *Brokers and Dealers*)

**Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.

Aspegren & Co., Prod. Exchg., N.Y.

Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago

Otto A. C. Hagen Co., 929 Ledger Bldg.,  
 Phila.

Spencer Kellogg & Sons, Buffalo, N.Y.

Portsmouth Cotton Oil Refining Co.,  
 Portsmouth, Va.

Procter & Gamble Co., Cincinnati, O.

**Raclin, Snow & Cleaver, Inc., 15 William St.,**  
 N.Y. See page 55.

Southern Cotton Oil Co.,  
 Produce Exchange, N.Y.

Wecoline Products Co., 15 E. 26th St., N.Y.

Wilson-Martin Co., Swanson St., Phila.

Woburn Degreasing Co., 1200 Harrison Ave.,  
 Harrison, N. J.

**COTTONSEED OIL**

(see also *Brokers and Dealers*)

Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago

Otto A. C. Hagen Co., 929 Ledger Bldg.,

Spencer Kellogg & Sons, Buffalo, N.Y.

Los Angeles Soap Co., Los Angeles, Calif.

Portsmouth Cotton Oil Refining Corp.,  
 Portsmouth, Va.

Procter & Gamble Co., Cincinnati, O.

**Raclin, Snow & Cleaver, Inc., 15 William St.,**  
 N.Y. See page 55.

J. H. Redding Co., 17 Battery Pl., N.Y.

C. F. Simonin's Sons, Phila.

Southern Cotton Oil Co.,  
 Produce Exchange, N.Y.

**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**  
 See inside back cover.



**COUMARIN***(see also Aromatic Chemicals)***Dow Chemical Co., Midland, Mich.**

See page 27.

**Maywood Chem. Wks., Maywood, N. J.****Monsanto Chemical Works, 1724 S. 2nd St.,  
St. Louis****CREOSOTE OIL****Baird & McGuire, Inc., Holbrook, Mass.**

See pages 16, 17.

**Barrett Company, 40 Rector St., N.Y.**

See page 18.

**Wm. Cooper & Nephews, 1909 Clinton Ave.,  
Chicago****Dominion Tar & Chemical Co., Ltd.,  
430 Canada Cement Bldg., Montreal, Canada****William E. Jordan & Bro., 2590 Atlantic Ave.,  
Brooklyn****Kentucky Color & Chem. Co., Louisville, Ky.****Koppers Prods. Co., Koppers Bldg.,  
Pittsburgh, Pa.**

See page 41.

**Neville Co., Pittsburgh****Reilly Tar & Chem. Co., Indianapolis**

See page 56.

**White Tar Co., Kearny, N. J.** See page 41.**CRESOL COMPOUND, U.S.P. and Technical****Baird & McGuire, Inc., Holbrook, Mass.**

See pages 16, 17.

**Barrett Co., 40 Rector St., N. Y.** See page 18.**Chemical Compounding Corp., 262 Huron St.,  
Brooklyn****Chemical Supply Co., 2450 Canal Road,  
Cleveland****Clifton Chem. Co., 247 Front St., N.Y.**

See page 21.

**Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.****Eagle Soap Corp., Huntington, Ind.,**

See page 28.

**Fuld Bros., 2308 Frederick Ave., Baltimore**

See page 31.

**James Good, Inc., Kensington, Phila.**

See page 34.

**Harley Soap Co., 2832 E. Pacific St., Phila.****Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco****Hysan Prods. Co., 2560 Armitage Ave., Chicago****Wm. E. Jordan & Bro., 2590 Atlantic Ave.,  
Brooklyn, N.Y.****Koppers Prods. Co., Koppers Bldg.,****Pittsburgh, Pa.** See page 41.**Mallinckrodt Chemical Works, St. Louis****McLaughlin Gormley King Co.,****Minneapolis, Minn.****Merck & Co., Rahway, N. J.****New York Soap Corp., 294 Pearl St., N.Y.**

See page 45.

**North Coast Chem. & Soap Wks.,****Seattle, Wash.****Pacific Chemical Co., 1421 Main St.,****Los Angeles****Peck's Prods. Co., 522-40 N. 2nd St., St. Louis****Theo. B. Robertson Prods. Co.,****700 W. Division St., Chicago****Shores Co., Cedar Rapids, Ia.****U. S. Sanitary Specialties Corp.,****435 S. Western Ave., Chicago****White Tar Co., Kearny, N. J.** See page 41.**CRESOLS****American-British Chem. Supplies,****180 Madison Ave., N.Y.** See page 10.**American Cyanamid & Chem. Corp.,****30 Rockefeller Plaza, N.Y.****Baird & McGuire, Holbrook, Mass.**

See pages 16, 17.

**Barrett Company, 40 Rector St., N.Y.**

See page 18.

**Innis, Speiden & Co., 117 Liberty St., N.Y.**

See page 40.

**William E. Jordan & Bro., 2590 Atlantic Ave.,****Brooklyn****Koppers Prods. Co., Koppers Bldg.,****Pittsburgh, Pa.**

See page 41.

**Monsanto Chemical Works, 1724 S. 2nd St.,****St. Louis****White Tar Co., Kearny, N. J.** See page 41.**CRESYLIC ACID****American-British Chem. Supplies,****180 Madison Ave., N.Y.** See page 10.**American Cyanamid & Chem. Corp.,****30 Rockefeller Plaza, N.Y.****Baird & McGuire, Holbrook, Mass.**

See pages 16, 17.

**Barrett Co., 40 Rector St., N.Y.**

See page 18.

**Wm. Cooper & Nephews, 1909 Clifton Ave.,****Chicago****Innis, Speiden & Co., 117 Liberty St., N.Y.**

See page 40.

**William E. Jordan & Bro., 2590 Atlantic Ave.,****Brooklyn****Koppers Prods. Co., Koppers Bldg.,****Pittsburgh, Pa.**

See page 41.

**Monsanto Chemical Works, 1724 S. 2nd St.,****St. Louis****Reilly Tar & Chem. Co., Indianapolis**

See page 56.

**White Tar Co., Kearny, N. J.**

See page 41.

**CRUTCHERS****Consolidated Prods. Co., 15 Park Row, N.Y.****(Used)**

See page 23.

**Houchin Machinery Co., Hawthorne, N. J.**

See page 37.

**Huber Machine Co., 259—46th St., Brooklyn**

See page 38.

**Littleford Bros., 443 E. Pearl St., Cincinnati****Newman Tallow & Soap Machinery Co.,****1051 W. 35th St., Chicago**

See page 44.

**Patterson Foundry & Machine Co.,****East Liverpool, Ohio****Sowers Mfg. Co., 1296 Niagara St.,****Buffalo, N.Y.****Stein-Brill Corp., 183 Varick St., N. Y. (Used)**

See page 63.

**Struthers-Wells Co., Warren, Pa.****CUSPIDORS, Paper Mache****Almo Trading Co., 61 E. 11th St., N. Y.****CUTTING TABLES****Consolidated Prods. Co., 15 Park Row, N.Y.****(Used)**

See page 23.

**Houchin Machinery Co., Hawthorne, N. J.**

See page 37.



**CUTTING TABLES (Cont'd)**

- Huber Machine Co., 259—46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 W. B'way, N.Y.  
**Newman Tallow & Soap Machinery Co.,**  
1051 W. 35th St., Chicago See page 44.  
Stein-Brill Corp., 183 Varick St., N. Y.  
See page 63.

**CYME NE**

- Brown Co., Portland, Me.  
Industrial Chem. Sales Co., 230 Park Ave., N.Y.

**DEAD OIL, see CREOSOTE OIL****DEALERS (Chemicals)**

- American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
American Oil & Supply Co., 236 Wilson Ave.,  
Newark, N. J.  
Baker & Gaffney, Drexel Bldg., Philadelphia  
H. J. Baker & Bro., 271 Madison Ave., N.Y.  
Barada & Page, Kansas City, Mo.  
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh  
Benner Chemical Co., 298 S. La Salle St.,  
Chicago  
Braun-Knecht-Heimann Co., 584 Mission St.,  
San Francisco  
Buckeye Soda Products Co., 32 Main St.,  
Cincinnati  
John A. Chew, 60 E. 42nd St., N.Y.  
Consumer's Chemical Co., Drexel Bldg.,  
Philadelphia  
T. G. Cooper & Co., 47 N. 2nd St., Phila.  
Dickerson Co., Drexel Bldg., Phila.  
Doe & Ingalls, 198 Milk St., Boston  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Eaton Clark Co., 204 Woodward Ave., Detroit  
Alex C. Ferguson Co., 24 Oregon Ave., Phila.  
Fort Pitt Chemical Co., 3134 Penn Ave.,  
Pittsburgh  
Frey & Horgan, 17 State St., N.Y.  
Otto A. C. Hagen Co., Public Ledger Bldg.,  
Phila.  
Harshaw Chemical Co., 1945 E. 97th St.,  
Cleveland  
Globe Chemical Co., Murray Road, Cinn.  
Arnold Hoffman & Co., 55 Canal St.,  
Providence, R. I.  
Hummel Chemical Co., 90 West St., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Jungmann & Co., 157 Chambers St., N.Y.  
E. & F. King & Co., 405 Atlantic Ave., Boston  
Los Angeles Chem. Co., 2200 Santa Fe Ave.,  
Los Angeles  
George Mann & Co., Providence, R. I.  
Merchants Chemical Co.,  
21 East 40th St., N.Y.  
1314 South Canal St., Chicago  
420 Barclay St., Milwaukee  
110—6th St., N. E. Minneapolis  
Millard-Heath Co., 214 Pine St., St. Louis  
Clarence Morgan & Co., 355 W. Ontario St.,  
Chicago  
National Oil & Supply Co.,  
170 Frelinghuysen Ave., Newark, N. J.  
National Sales Co., 31 E. 13th St., Cinn.

- Newman Tallow & Soap Machinery Co.,**  
1051 W. 35th St., Chicago See page 44.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
H. B. Prior Co., 420 Lexington Ave., N.Y.  
R. F. Revson Co., 91—7th Ave., N.Y.  
G. S. Robins & Co., 310 S. Commercial St.,  
St. Louis  
Rodgers Chemical Co., Fitzsimmons Bldg.,  
Pittsburgh  
**Rohm & Haas Co., Inc.,**  
222 W. Washington Sq., Phila. See page 57.  
H. J. Rolls Chemical Co., Buffalo, N.Y.  
E. M. Sergeant Pulp & Chemical Co.,  
350—5th Ave., N.Y.  
J. U. Starkweather Co., Providence, R. I.  
Thompson-Hayward Chem. Co.,  
2915 Southwestern Blvd., Kansas City  
Arthur C. Trask Co., 4103 S. La Salle St.,  
Chicago, Ill.  
Truempy, Fasey & Besthoff, 22 E. 40th St.,  
N.Y.  
Jos. Turner & Co., 500 - 5th Ave., N.Y.C.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.

**DEALERS (Oils and Fats)**

- Balfour, Guthrie & Co., 67 Wall St., N.Y.  
Douredoure Bros., 227 S. Front St., Phila.  
Alex Ferguson Co., 24 Oregon Ave., Phila.  
Frey & Horgan, 17 State St., N.Y.  
Otto A. C. Hagen Co., Public Ledger Bldg.,  
Phila.  
A. W. Harris Oil Co., Providence, R. I.  
J. H. Hinz Co., 825 Engineers Bldg., Cleveland  
Hummel Chemical Co., 90 West St., N.Y.  
Innes & Co., 132 Front St., N.Y.  
Miller & Co., 2401 Chestnut St., Philadelphia  
Clarence Morgan & Co., 353 W. Ontario St.,  
Chicago  
Murray Oil Products Co., 21 West St., N.Y.  
**Newman Tallow & Soap Machinery Co.,**  
1051 W. 35th St., Chicago See page 44.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Rayner & Stonington, 79 Wall St., N.Y.  
E. M. Sergeant Pulp & Chemical Co.,  
Empire State Bldg., N.Y.  
E. R. Smead Co., Hanna Bldg., Cleveland  
**Smith-Weihman Co., 15 Moore St., N.Y.**  
See page 59.  
Swan & Finch Oil Co., 205 E. 42nd St., N.Y.  
Arthur C. Trask Co., 4103 S. La Salle St.,  
Chicago  
Tunley & Co., 31 Water St., N.Y.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.

**DECOLORIZING CARBONS**

- American Active Carbon Co., Columbus, O.  
Cleveland Cliffs Iron Co., Union Trust Bldg.,  
Cleveland  
Darco Sales Corp., 45 E. 42nd St., N.Y.  
Durkee Famous Foods, Inc., 2670 Elston Ave.,  
Chicago  
Industrial Chem. Sales Co., Inc.,  
230 Park Ave., N.Y.

**DEGRAS**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Bopf-Whittam Corp., Westfield, N. J.  
Otto A. C. Hagen Co., 929 Ledger Bldg.,  
Phila.  
Hummel Chemical Co., 90 West St., N.Y.  
National Oil Products Co., Harrison, N.J.  
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
Robinson-Wagner Co., 21 West St., N.Y.

**DEODORIZING BLOCK COLORS**(see also *Perfuming Compounds*)

American Aniline Products, Inc.,  
50 Union Sq., N.Y.  
Dyestuffs & Chemicals, Inc.,  
11th & Monroe Sts., St. Louis  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
Interstate Color Co., Inc., 5 Beekman St., N.Y.  
Leeben Chemical Co., 389 Washington St., N.Y.  
Pylam Products Co., 799 Greenwich St., N.Y.  
See page 54.  
Sandoz Chem. Wks., 61 Van Dam St., N.Y.

**DEODORIZING BLOCK DIES (see SOAP DIES)****DEODORIZING BLOCK HOLDERS (see HOLDERS, DEODORIZING BLOCKS)****DEODORIZING BLOCK PERFUMES (see PERFUMING COMPOUNDS)****DEODORIZING BLOCK PRESSES (see PRESSES)****DEODORIZING BLOCKS**

Clifton Chem. Co., 247 Front St., N.Y.  
See page 21.  
Columbia Soap & Chem. Co., Inc.,  
324 Leavenworth St., San Francisco  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Crystal Labs., Inc., 21 W. Park Way, N. E.,  
Pittsburgh, Pa.  
Eagle Soap Corp., Huntington, Ind.,  
See page 28.  
Elkay Prods. Corp., 542—1st Ave., N.Y.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Goulard & Olena, 140 Liberty St., N.Y.  
Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco  
Hysan Prods. Co., 2560 Armitage Ave., Chicago  
Jansen Soap & Chemical Co., 324 Leavenworth  
St., San Francisco, Cal.  
Koppers Prods. Co., Koppers Bldg.,  
Pittsburgh, Pa. See page 41.  
Marshall Products, Inc., 806 N. 1st St.,  
St. Louis  
New York Soap Corp., 294 Pearl St., N.Y.  
See page 45.  
North Coast Soap & Chem. Wks.,  
Seattle, Wash.  
Palmer Products Inc., Waukesha, Wis.

Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Puritan Chemical Co., Atlanta, Ga.  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Sanico Chemical Corp., 611 Broadway, N.Y.  
Selig Co., 336 Marietta St., Atlanta, Ga.  
Solshine Mfg. Co., 17 Caldwell St., Boston  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
White Tar Co., Kearny, N. J. See page 41.

**DEODORIZING CRYSTALS**

Clifton Chem. Co., 247 Front St., N.Y.  
See page 21.  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Crystal Labs, Inc., 21 W. Park Way, N. E.,  
Pittsburgh, Pa.  
Eagle Soap Corp., Huntington, Ind.,  
See page 28.  
Elkay Prods. Corp., 542—1st Ave., N.Y.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Goulard & Olena, 140 Liberty St., N.Y.  
Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco  
Hysan Prods. Co., 2560 Armitage Ave., Chicago  
Jansen Soap & Chem. Co., 324 Leavenworth St.,  
San Francisco, Cal.  
Kay Chemical Co., 329 Ringold St., Baltimore  
Koppers Products Co., Koppers Bldg.,  
Pittsburgh, Pa. See page 41.  
Marshall Prods., Inc., 806 N. 1st St., St. Louis  
New York Soap Corp., 294 Pearl St., N.Y.  
See page 45.  
Pacific Chem. Co., 1421 N. Main St.,  
Los Angeles  
Palmer Prod., Inc., Waukesha, Ill.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Sanico Chemical Corp., 611 Broadway, N.Y.  
Solshine Mfg. Co., 17 Caldwell St., Boston  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
White Tar Co., Kearny, N. J. See page 41.  
**DEODORIZING EQUIPMENT (For Oils)**  
Edouard Bataille, 40 E. 34th St., N.Y.  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Wm. Garrigue & Co., 9 S. Clinton St., Chgo.  
Houchin Machinery Co., Hawthorne, N. J.  
See page 37.  
Ernest Scott & Co., Fall River, Mass.  
Stein-Brill Corp., 183 Varick St., N. Y. (Used)  
See page 63.  
F. J. Stokes Machine Co., 5974 E. Tabor Rd.,  
Phila.  
Wurster & Sanger, 5201 Kenwood Ave., Chgo.  
**DERRIS EXTRACT**  
Wm. Benkert & Co., 100 Gold St., N.Y.  
See page 19.  
Derris, Inc., 79 Wall St., N.Y. See page 26.  
McCormick & Co., Baltimore, Md.  
See page 43.  
Murray & Nickell Mfg. Co.,  
2608 Arthington St., Chicago  
S. B. Penick & Co., 132 Nassau St., N.Y.

**DERRIS ROOT**

- Wm. Benkert & Co., 100 Gold St., N.Y.  
 See page 19.  
 Derris, Inc., 79 Wall St., N.Y. See page 26.  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
 McCormick & Co., Baltimore See page 43.  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago  
 S. B. Penick & Co., 132 Nassau St., N.Y.

**DIES (see SOAP DIES)****DIETHANOLAMINE (see ETHANOLAMINE)****DIP OIL**

- Baird & McGuire, Holbrook, Mass.  
 See pages 16, 17.  
 Barrett Co., 40 Rector St., N.Y. See page 18.  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Clifton Chem. Co., 247 Front St., N.Y.  
 See page 21.  
 Wm. Cooper & Nephews, 1909 Clifton Ave.,  
 Chicago  
 William E. Jordan & Bro., 2590 Atlantic Ave.,  
 Brooklyn  
 Koppers Prods. Co., Koppers Bldg.,  
 Pittsburgh, Pa. See page 41.  
 McLaughlin Gormley King Co.,  
 Minneapolis, Minn.  
 White Tar Co., Kearny, N. J. See page 41.

**DIPHENYL OXIDE (see AROMATIC CHEMICALS)****DISH WASHING COMPOUNDS (see WASHING COMPOUNDS)****DISINFECTANTS, CHLORINATED**

- Baird & McGuire, Inc., Holbrook, Mass.  
 See pages 16, 17.  
 Carbide & Carbon Chemicals Corp.,  
 30 E. 42nd St., N.Y.  
 Chemical Compounding Corp., 262 Huron St.,  
 Brooklyn  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
 Eagle Soap Corp., Huntington, Ind.,  
 See page 28.  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.  
 James Good, Inc., Kensington, Phila.  
 See page 34.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco, Cal.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Mathieson Alkali Works, 60 E. 42nd St., N.Y.  
 McLaughlin Gormley King Co.,  
 Minneapolis, Minn.  
 Merck & Co., Rahway, N. J.  
 Monsanto Chemical Works, 1724 S. 2nd St.,  
 St. Louis  
 North Coast Soap & Chem. Works,  
 Seattle, Wash.  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago

- Sherwin-Williams Co., 601 Canal Rd.,  
 Cleveland  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago

**DISINFECTANTS, COAL TAR**

- American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 An-Fo Mfg. Co., 3129 Elmwood Ave.,  
 Oakland, Cal.  
 Baird & McGuire, Inc., Holbrook, Mass.  
 See pages 16, 17.  
 Chemical Compounding Corp., 262 Huron St.,  
 Brooklyn  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.  
 Wm. Cooper & Nephews, 1909 Clifton Ave.,  
 Chicago  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
 Eagle Soap Corp., Huntington, Ind.,  
 See page 28.  
 Ferguson Laboratories, 24 Oregon Ave., Phila.  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.  
 James Good, Inc., Kensington, Phila.  
 See page 34.  
 Goulard & Olena, 140 Liberty St., N.Y.  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 William E. Jordan & Bro., 2590 Atlantic Ave.,  
 Brooklyn  
 Koppers Prods. Co., Koppers Bldg.,  
 Pittsburgh, Pa. See page 41.  
 McLaughlin Gormley King Co.,  
 1715 Fifth St., S. E., Minneapolis, Minn.  
 Merck & Co., Rahway, N. J.  
 New York Soap Corp., 294 Pearl St., N.Y.  
 See page 45.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Rochester Germicide Co., Rochester, N.Y.  
 Sherwin-Williams Co., 601 Canal Rd.,  
 Cleveland, Ohio  
 Shores Co., Cedar Rapids, Ia.  
 Vliet & Co., 638 Monroe St., Brooklyn  
 West Disinfecting Co., Long Island City, N.Y.  
 White Tar Co., Kearny, N. J. See page 41.

**DISINFECTANTS, PINE OIL**

- An-Fo Mfg. Co., 3129 Elmwood Ave.,  
 Oakland, Cal.  
 Baird & McGuire, Inc., Holbrook, Mass.  
 See pages 16, 17.  
 Chemical Compounding Corp.,  
 262 Huron St., Bklyn.  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.  
 Columbia Soap & Chem. Co.,  
 324 Leavenworth St., San Francisco  
 Wm. Cooper & Nephews, 1909 Clifton Ave.,  
 Chicago  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
 Eagle Soap Corp., Huntington, Ind.,  
 See page 28.

**DISINFECTANTS, PINE OIL (Cont'd)**

- Elkay Prods. Corp., 542—1st Ave., N.Y.  
 Ferguson Labs., 24 Oregon Ave., Phila.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
**James Good, Inc., Kensington, Phila.**  
 See page 34.  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chem. Co., 324 Leavenworth St.,  
 San Francisco, Cal.  
**Koppers Products Co., Koppers Bldg.,**  
**Pittsburgh, Pa.** See page 41.  
 McLaughlin Gormley King Co.,  
 Minneapolis, Minn.  
**New York Soap Corp., 294 Pearl St., N.Y.**  
 See page 45.  
 Pacific Chem. Co., 1421 N. Main St.,  
 Los Angeles  
 Palmer Prods., Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Sherwin-Williams Co., 601 Canal Rd.,  
 Cleveland, O.  
 Shores Co., Cedar Rapids, Ia.  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 West Disinfecting Co., Long Island City, N.Y.  
 White Tar Co., Kearny, N. J. See page 41.

**DISPENSERS, Liquid Soap (see SOAP DISPENSERS)****DRAIN PIPE SOLVENTS**

- Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
**James Good, Inc., Kensington, Phila.**  
 See page 34.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Hull Co., 305 Washington St., Brooklyn  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Mechling Bros. Chemical Co.,  
 Line St. & Coopers Creek, Camden, N.J.  
 North Coast Chem. & Soap Wks.,  
 Seattle, Wash.  
 Palmer Products, Inc., Waukesha, Wis.  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Sanico Chemical Corp., 611 Broadway, N.Y.  
 John Sunshine Chem. Co., 604 W. Lake St.,  
 Chicago  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago

**DRIP MACHINES**

- Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.

Eagle Soap Corp., Huntington, Ind.

- Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.

- Garnet Chem. Corp., 911 N. Lumber St.,  
 Allentown, Pa.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Rochester Germicide Co., 16 Dowling Pl.,  
 Rochester, N.Y.  
 Sanitary Supplies Co., P. O. Box 5208, Phila.  
 William Vogel & Bros., 37 S. 9th St., Brooklyn

**DRUM FILLING MACHINERY (see FILLING MACHINERY, DRUMS)****DRUM WASHERS (see WASHING MACHINERY, DRUMS)****DRUMS, Fibre (see BARRELS, FIBRE)****DRUMS, Steel (see BARRELS, STEEL)****DRY CLEANING SOAPS**

- Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.

- Beltine Chem. & Mfg. Co.,  
 6155 Wentworth Ave., Chicago  
 Cincinnati Soap Co., Cincinnati  
**Clifton Chemical Co., 247 Front St., N.Y.**  
 See page 21.

- Davies Young Soap Co., Dayton, O.**  
 See page 25.

- Eagle Soap Corp., Huntington, Ind.**  
 See page 28.

- J. Eavenson & Sons, Del. & Penn Sts.,  
 Camden, N. J.  
 Force Prods. Co., Chicago  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.

- Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Kranich Soap Co., 54 Richards St., Brooklyn  
 Midland Chem. Labs., Dubuque, Ia.  
 North Coast Chem. & Soap Wks.,  
 Seattle, Wash.

- Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Riverside Mfg. Co., 4919 Conn St., St. Louis  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Ultra Chem. Wks., Inc., Kitay Bldg.,  
 Paterson, N. J.  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.

**DRYERS, CHIP SOAP and BARS**

- Buck Dryer Corp., Manchester, Conn.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Houchin Machinery Co., Hawthorne, N. J.  
 See page 37.  
**Huber Machine Co., 259—46th St., Brooklyn**  
 See page 38.  
 J. M. Lehmann Co., 248 W. Broadway, N.Y.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.

**DRYERS, CHIP SOAP and BARS (Cont'd)**

- Proctor & Schwartz, 7th St. & Tabor Rd.,  
Philadelphia See page 53.  
C. G. Sargent's Sons, Graniteville, Mass.  
See page 58.  
Stein-Brill Corp., 183 Varick St., N. Y. (Used)  
See page 63.

**DRYING MACHINERY (General)**

- C. O. Bartlett & Snow Co., Cleveland  
Buck Dryer Corp., Manchester, Conn.  
Buckeye Dryer Co., 131 W. Lake St., Chicago  
Buffalo Forge Co., 490 Broadway, Buffalo, N.Y.  
Buffalo Foundry & Machine Co., Buffalo, N.Y.  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Gordon Davis Engineering Co.,  
21 E. 40th St., N.Y.  
Drying Systems, Inc., 1800 Foster Ave., Chicago  
Ellis Dryer Co.,  
Roosevelt Road & Talman Ave., Chicago  
B. F. Gump Co., 431 S. Clinton Ct., Chicago  
Houchin Machinery Co., Hawthorne, N. J.  
See page 37.  
Lancaster Iron Works, Lancaster, Pa.  
J. M. Lehmann Co., 248 W. Broadway, N.Y.  
Louisville Drying Equipment Co.,  
Louisville, Ky.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Oven Equipment Co., New Haven, Conn.  
Philadelphia Drying Mach. Co., Philadelphia  
Proctor & Schwartz, 7th St. & Tabor Rd.,  
Philadelphia See page 53.  
C. G. Sargent's Sons Corp.,  
Graniteville, Mass. See page 58.  
Ernest Scott & Co., Fall River, Mass.  
Stein-Brill Corp., 183 Varick St., N. Y. (Used)  
See page 63.  
F. J. Stokes Machine Co., Philadelphia, Pa.  
Struthers-Wells Co., Warren, Pa.  
B. F. Sturtevant Co., Hyde Park, Boston

**EMULSIFYING AGENTS**

- American Colloid Co., 363 W. Superior St.,  
Chicago See page 10.  
Arabol Mfg. Co., 110 E. 42nd St., N.Y.  
Carbide & Carbon Chemicals Corp.,  
30 E. 42nd St., N.Y.  
A. C. Drury & Co., 219 North East Water St.,  
Chicago  
Hull Co., 305 Washington St., Bklyn.  
Industrial Chem. Sales Co., 230 Park Ave., N.Y.  
Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
National Oil Products Co., Harrison, N.J.  
Pylam Products Co., 799 Greenwich St., N.Y.  
See page 54.  
Richards Chem. Works, 190 Warren St.,  
Jersey City, N.J.  
Swann Chem. Co., 420 Lexington Ave., N.Y.  
Jacques Wolfe & Co., Passaic, N.J.

**ESSENTIAL OILS**

- van Ameringen-Haebler, Inc.,  
315—4th Ave., N.Y. See pages 12, 13.  
Arthur Bennett, Inc., 109 W. Austin Ave.,  
Chicago  
Budd Aromatic Chemical Co.,  
667 Washington St., N.Y.

- W. J. Bush & Co., 11 E. 38th St., N.Y.  
Ph. Chaleyer, Inc., 200 Varick St., N.Y.  
Antoine Chiris Co., 147 Waverly Pl., N.Y.  
Compagnie Duval, 121 E. 24th St., N.Y.  
Compagnie Parento, Inc.,  
Croton-on-Hudson, N.Y.  
Dodge & Olcott Co., 180 Varick St., N.Y.  
P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago, Ill.  
Felton Chemical Co., 603 Johnson Ave.,  
Brooklyn See page 30.  
Benj. French, Inc., 160—5th Ave., N.Y.  
Fritzsch Brothers, Inc., 78 Beekman St., N.Y.  
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.  
See inside front cover, 33.  
James B. Horner, Inc., 3 Platt St., N.Y.  
Chas. L. Huisking & Co., 155 Varick St., N.Y.  
Industrial Organics, 131 E. 45th St., N.Y.  
Lautier Fils, 72 Beekman St., N.Y.  
Leghorn Trading Co., 155 E. 44th St., N.Y.  
See page 42.  
Pierre Lemoine, Inc., 200 Varick St., N.Y.  
Geo. Lueders & Co., 427 Washington St., N.Y.  
Magnus, Mabec & Reynard, 32 Cliff St., N.Y.  
J. Manheimer, 10 Greene St., N.Y.  
A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.  
Hijos de Francisco Navarro,  
119 Nassau St., N.Y.  
Neumann-Buslee & Wolfe, 224 W. Huron St.,  
Chicago  
Norda, Inc., 601 W. 26th St., N.Y.  
Orbis Products Trading Co., 215 Pearl St., N.Y.  
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.  
Riviera Products Co., 215 W. Ohio St., Chicago  
H. C. Ryland, Inc., 161 Water St., N.Y.  
Edwin Seebach Co., 912 Broadway, N.Y.  
Wm. G. Sibbach & Co., 201 S. 2nd Ave.,  
Maywood, Ill.  
Geo. Silver Import Co., 461—4th Ave., N.Y.  
Standard Aromatics, Inc.,  
Bush Terminal Bldg. #1, Bklyn., N.Y.  
Synfleur Scientific Labs., Monticello, N.Y.  
A. M. Todd Co., Kalamazoo, Mich.  
George Uhe, 11 Cliff St., N.Y. (Broker)  
Ungerer & Co., 13 W. 20th St., N.Y.  
See page facing inside front cover, 65.  
Albert Verley, Inc., 11 E. Austin Ave., Chicago

**ETHANOLAMINE**

- Carbide & Carbon Chemicals Corp.,  
30 E. 42nd St., N.Y.

**ETHER**

- American Solvents & Chem. Corp.,  
285 Madison Ave., N.Y.  
Carbide & Carbon Chemicals Corp.,  
30 E. 42nd St., N.Y.  
Chas. Cooper & Co., 194 Worth St., N.Y.  
Mallinckrodt Chem. Wks., 3600 N. 2nd St.,  
St. Louis  
Merck & Co., Rahway, N. J.  
Skelly Oil Co., 2534 Madison Ave.,  
Kansas City, Mo. (Petroleum)  
U. S. Industrial Chem. Co.,  
110 E. 42nd St., N.Y.

**EUCALYPTUS OIL (see ESSENTIAL OILS)**



**EVAPORATORS**

E. B. Badger & Sons Co., 75 Pitt St., Boston  
 Buffalo Fndry. & Mach. Co., Buffalo, N.Y.  
 Chemical Equipment Co., Montpelier, Ind.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**

(Used) See page 23.

William Garrigue & Co., 9 S. Clinton St., Chicago

Kestner Evaporator Co.,  
 18th St. & Allegheny Ave., Philadelphia  
 Lancaster Iron Works, Lancaster, Pa.

**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)

See page 44.

Ernest Scott & Co., Fall River, Mass.

**Stein-Brill Corp., 183 Varick St., N. Y. (Used)**

See page 63.

F. J. Stokes Machine Co., Phila., Pa.  
 Struthers-Wells Titusville Corp., Warren, Pa.  
 Swenson Evaporator Co., Harvey, Ill.  
 Wurster & Sanger, 5201 Kenwood Ave., Chicago  
 Zarembo Co., Buffalo, N.Y.

**FANS (Ventilating & Exhaust)**

Buffalo Forge Co., 490 Broadway, Buffalo  
 Duriron Co., Dayton, O.  
 Garden City Fan Co., McCormick Bldg., Chgo.  
 General Regulator Corp., 2608 Arthington St., Chicago  
 Graybar Electric Co., 42 Lexington Ave., N.Y.

**FAT SPLITTING REAGENTS**

Twitchell Process Co., St. Bernard, Ohio

**FATTY ACID PLANTS**

William Garrigue & Co., 9 S. Clinton St., Chicago  
 Ernest Scott & Co., Fall River, Mass.  
 Wurster & Sanger, 5201 Kenwood Ave., Chicago

**FATTY ACIDS**

(see also *Brokers and Dealers*)

**Armour Soap Wks., 1355 W. 31st St., Chicago**

See page 14.

Celina Stearic Acid Co., Celina, Ohio  
 Darling & Co., 4201 So. Ashland Ave., Chicago  
 Durkee Famous Foods, Inc., 2670 Elston Ave., Chicago

Emery Industries, Inc., 4300 Carew Tower, Cincinnati

A. Gross & Co., 122 E. 42nd St., N.Y.

Industrial Chem. Sales Co., Inc.,  
 230 Park Ave., N.Y.

Spencer Kellogg & Sons, Buffalo, N.Y.

**Leghorn Trading Co., 155 E. 44th St., N.Y.**

See page 42.

Los Angeles Soap Co., Los Angeles, Calif.

Procter & Gamble Co., Cincinnati, O.

**Raclin, Snow & Cleaver, Inc., 15 William St., N.Y.**

See page 55.

J. H. Redding Co., 17 Battery Pl., N.Y.

Silmo Chemical Co., Vineland, N.J.

C. F. Simonin's Sons, Tioga & Belgrade Sts., Phila.

Southern Cotton Oil Co.,

Produce Exchange, N.Y.

Swift & Co., Union Stock Yards, Chicago

Theobald Animal By-Products Refinery,

Kearny, N.J.

Twitchell Process Co., Ivorydale, Ohio

Weoline Products, Inc., 15 E. 26th St., N.Y.

M. Werk Co., St. Bernard, Cincinnati  
**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**

See inside back cover.

Wilson-Martin Co., Swanson St., Phila.

Woburn Degreasing Co., 1200 Harrison Ave., Harrison, N.J.

**FATTY ALCOHOLS, Sulfonated, see  
SULFONATED FATTY ALCOHOLS****FATTY ALCOHOLS**

**E. I. Du Pont de Nemours & Co.,**

Wilmington, Del.

See page 4.

Michel Export Co., 95 Broad St., N.Y.

**FELDSPAR**

**E. I. Du Pont de Nemours & Co.,**

Wilmington, Del.

See page 4.

Footo Mineral Co., 1608 Summer St., Phila.

Hammill & Gillespie, 225 Broadway, N.Y.

Harshaw Chemical Co., 1945 E. 97th St., Cleveland

**Innis, Speiden & Co., 117 Liberty St., N.Y.**

See page 40.

Tamms Silica Co., 228 N. La Salle St., Chgo.

**FIBRE CASES (see BOXES, FIBRE)****FIBRE CANS (see CANS, FIBRE)****FILLERS, see TALC, BENTONITE, CLAYS, ETC.****FILLING MACHINERY (Flakes)**

**Consolidated Prods. Co., 15 Park Row, N.Y.**

(Used)

See page 23.

J. L. Ferguson Co., Joliet, Ill.

B. F. Gump Co., 431 S. Clinton St., Chicago,  
 (Bbls. & Bags)

S. Howes Co., Silver Creek, N.Y. (Bbls.)

Johnson Automatic Sealer Co., Ltd.

Battle Creek, Mich.

**Newman Tallow & Soap Machy. Co.,**

1051 W. 35th St., Chicago (Used)

See page 44.

**Pneumatic Scale Corp., Norfolk Downs, Mass.**

See page 48, 49.

**Stein-Brill Corp., 183 Varick St., N. Y. (Used)**

See page 63.

**Stokes & Smith Co., 4915 Summerdale Ave., Philadelphia**

See page 64.

Triangle Package Machinery Co.,  
 910 N. Spaulding Ave., Chicago

**FILLING MACHINERY (Liquids, Bottles)**

Alsop Engineering Corp., 39 W. 60th St., N.Y.

**Consolidated Prods. Co., 15 Park Row, N.Y.**

(Used)

See page 23.

Ertel Engineering Corp., 120 E. 16th St., N.Y.

Karl Kiefer Machine Co., Cincinnati

**Newman Tallow & Soap Machy. Co.,**

1051 W. 35th St., Chicago

See page 44.

**Pneumatic Scale Corp., Norfolk Downs, Mass.**

See pages 48, 49.

**Stein-Brill Corp., 183 Varick St., N.Y.**

See page 63.

U. S. Bottlers Machinery Co.,

4025 N. Rockwell St., Chicago



**FILLING MACHINERY (Liquids, Cans)**

Alsop Engineering Corp., 39 W. 60th St., N.Y.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Horix Mfg. Co., Corliss Station, Pittsburgh  
 Karl Kiefer Machine Co., Cincinnati  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago See page 44.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 See page 63.  
 F. J. Stokes Machine Co.,  
 Tabor Rd., Philadelphia  
 U. S. Bottlers Machinery Co.,  
 4025 N. Rockwell St., Chicago  
 The Vol-U-Meter Co., 710 Ohio St.,  
 Buffalo, N.Y.

**FILLING MACHINERY (Liquids, Drums)**

Alsop Engineering Corp., 39 W. 60th St., N.Y.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 National Acme Co., E. 131st St. & Coit Ave.,  
 Cleveland  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago See page 44.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 See page 63.  
 The Vol-U-Meter Co., 710 Ohio St.,  
 Buffalo, N.Y.

**FILLING MACHINERY (Pastes, Cans)**

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Filler Machine Co., 1250 E. Montgomery St.,  
 Philadelphia  
 Karl Kiefer Machine Co., Cincinnati  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago See page 44.  
 Progressive Eng. Co., Torresdale, Pa.  
 C. T. Small Mfg. Co., 1204 Ferguson Ave.,  
 St. Louis, Mo.  
 Sprague-Sells Corp., 308 W. Washington St.,  
 Chicago  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 See page 63.  
**Stokes & Smith Co., Summerdale, Phila.**  
 See page 64.  
 F. J. Stokes Mach. Co., 5974 E. Tabor Rd.,  
 Philadelphia  
 Triangle Package Mch. Co.,  
 910 N. Spaulding Ave., Chicago  
 Vol-U-Meter Co., 710 Ohio St., Buffalo, N.Y.

**FILLING MACHINERY (Pastes, Drums)**

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati  
**Newman Tallow & Soap Machy. Co.,**  
 See page 44.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 See page 63.  
**Stokes & Smith Co., Summerdale, Phila.**  
 See page 64.  
 The Vol-U-Meter Co., 710 Ohio St.,  
 Buffalo, N.Y.

**FILLING MACHINERY (Pastes, Tubes)**

Arthur Colton Co., Detroit, Mich.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.

Karl Kiefer Machine Co., Cincinnati  
**Stein-Brill Corp., 183 Varick St., N.Y.**

See page 63.

F. J. Stokes Mach. Co., 5974 E. Tabor Rd.,  
 Philadelphia

**FILLING MACHINERY (Powders)**

Consolidated Package Machinery Corp.,  
 1400 West Ave., Buffalo, N.Y.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati  
 J. L. Ferguson Co., Joliet, Ill.  
 B. F. Gump Co., 431 S. Clinton St., Chicago  
 S. Howes Co., Silver Creek, N.Y. (Bbbs.)  
 Johnson Automatic Sealer Co.,  
 Battle Creek, Mich.  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.  
 F. B. Redington Co., 112 S. Sangamon St.,  
 Chicago  
 C. T. Small Mfg. Co., 1204 Ferguson Ave.,  
 St. Louis  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 See page 63.  
**Stokes & Smith Co., Summerdale, Phila.**  
 See page 64.  
 F. J. Stokes Mach. Co., 5974 E. Tabor Rd.,  
 Philadelphia  
 Triangle Package Machinery Co.,  
 910 N. Spaulding Ave., Chicago

**FILTER CLOTHS**

Abbott Associates, 417 Park Sq. Bldg., Boston  
 Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 Asbestos Spinning & Weaving Co.,  
 16 Beaver St., N.Y.  
 Cleveland Wire Cloth & Mfg. Co.,  
 3574 E. 78th St., Cleveland  
 B. F. Gump Co., 431 S. Clinton St., Chicago  
 Wm. E. Hooper & Sons Co.,  
 Juniper & Cherry Sts., Philadelphia  
 Independent Filter Press Co., 418—3rd Ave.,  
 Brooklyn  
 National Filter & Cloth Weaving Co.,  
 134 Broadway, N.Y.  
 Newark Wire Cloth Co., 223 Verona Ave.,  
 Newark, N. J.  
 Oliver United Filters, Inc.,  
 33 W. 42nd St., N.Y.  
 J. T. Perkins Co., 669 Kent Ave., Brooklyn  
 Wm. R. Perrin & Co., 349 W. 23rd St., Chicago  
 T. Shriver & Co., Harrison, N. J.  
 D. R. Sperry & Co., Batavia, Ill.

**FILTER PAPER**

Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 H. Reeve Angel & Co., 7 Spruce St., N.Y.  
 P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago, Ill.  
 August Giese & Son, 162 William St., N.Y.  
 Karl Kiefer Machine Co., Cincinnati, O.  
 Geo. Lueders & Co., 427 Washington St., N.Y.  
 Magnus, Mabce & Reynard, 32 Cliff St., N.Y.  
 J. Manheimer, 10 Greene St., N.Y.  
 Neumann-Buslee & Wolfe, Inc.,  
 224 W. Huron St., Chicago  
 Palo Co., 153 W. 23rd St., N.Y.

**FILTER PRESSES**

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
(Used) See page 23.

**Independent Filter Press Co., 418—3rd Ave., Brooklyn**

**Joubert & Goslin, 82 Beaver St., N.Y.**

**Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago (Used)**

See page 44.

**Oliver United Filters, Inc., 33 W. 42nd St., N.Y.**

**Patterson Foundry & Machine Co., East Liverpool, Ohio**

**Wm. R. Perrin & Co., 349 W. 23rd St., Chicago**

**T. Shriver & Co., Harrison, N. J.**

**D. R. Sperry & Co., Batavia, Ill.**

**Stein-Brill Corp., 183 Varick St., N.Y.**

See page 63.

**United Filters Corp., Hazelton, Pa.**

**FILTERS (Special)**

**Alsop Engineering Corp., 39 W. 60th St., N.Y.**

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
(Used) See page 23.

**Ertel Engineering Corp., 120 E. 16th St., N.Y.**

**Foster Pump Wks., Inc., 54 Washington St., Brooklyn**

**Jacob House & Sons, 52 St. Paul St., Buffalo**

**Karl Kiefer Machine Co., Cincinnati**

**Lancaster Iron Works, Lancaster, Pa.**

**Mixing Equipment Co., 1024 Garson Ave., Rochester, N.Y.**

**Newman Tallow & Soap Machy. Co., 1051 W. 35th St., Chicago**

See page 44.

**Oliver United Filters, Inc., 33 W. 42nd St., N.Y.**

**Permutit Co., 330 W. 42nd St., N.Y.**

**T. Shriver & Co., Harrison, N. J.**

**Stein-Brill Corp., 183 Varick St., N.Y.**

(Used) See page 63.

**Struthers, Wells Co., Warren, Pa.**

**U. S. Bottlers Mch. Co.,**

**4015 N. Rockwell St., Chicago**

**Whiting Corp., Harvey, Ill.**

**FISH OILS**

(see also *Brokers and Dealers*)

**Atlantic Products Corp.,**

**Commercial Trust Bldg., Phila.**

**Atlas Refinery, Lockwood St., Newark, N. J.**

**Balfour, Guthrie & Co., 67 Wall St., N.Y.**

**Irving R. Boody & Co., 99 Wall St., N.Y.**

**Harvey & Outerbridge, 250 Park Ave., N.Y.**

**Murray Oil Products Co., 21 West St., N. Y.**

**National Oil Prods. Co., Harrison, N.J.**

**Procter & Gamble Co., Cincinnati, O.**

**Raclin, Snow & Cleaver, 15 William St., N.Y.**

See page 55.

**J. H. Redding Co., 17 Battery Pl., N. Y.**

**Werner G. Smith Co., 2191 W. 110th St., Cleveland**

**Southern Menhaden Corp.,**

**350 Madison Ave., N.Y.**

**Wilbur-Ellis Co., 17 Battery Pl., N. Y.**

See inside back cover.

**FISH OIL SOAPS**

**James Good, Inc., Kensington, Philadelphia**

See page 34.

**Los Angeles Soap Co., Los Angeles, Calif.**

**Marshall Products, Inc., 806 N. 1st St., St. Louis**

**National Oil Products Co., Harrison, N. J.**

**Newell Gutrad Co., 350 Fremont St., San Francisco, Cal.**

**North Coast Chem. & Soap Works, Seattle, Wash.**

**Palmer Products, Inc., Waukesha, Wis.**

**Peck's Products Co., 522-40 N. 2nd St., St. Louis**

**Theo. B. Robertson Prods. Co.,**

**700 W. Division St., Chicago**

**Silmo Chemical Co., Vineland, N.J.**

**Werner G. Smith Co., 2191 W. 110th St., Cleveland**

**FIXATIVES, PERFUME (See ESSENTIAL OILS)****FLAKE SOAPS (see CHIP SOAPS)****FLOOR FINISHES (Non-Wax)**

**Davies-Young Soap Co., Dayton, O.**

See page 25.

**Eagle Soap Corp., Huntington, Ind.**

See page 28.

**Federal Varnish Co., 337 S. Peoria St., Chicago**

See page 29.

**Fuld Bros., 2308 Frederick Ave., Baltimore**

See page 31.

**FLOOR MACHINES**

**Amer. Floor Surfacing Mach. Co., Toledo, O.**

**Continental Car-Na-Var Corp., Brazil, Ind.**

**Eagle Soap Corp., Huntington, Ind.**

See page 28.

**Fay Co., 130 Madison Ave., N.Y.**

**Finnell System, Inc., 152 Chambers St., Elkhart, Ind.**

**General Floor Craft Corp., 333 6th Ave., N.Y.**

**Hild Floor Machine Co., 108 W. Lake St., Chicago**

**Kent Co., Rome, N.Y.**

**S. C. Lawlor Co., 121 N. Curtis St., Chicago**

**Lincoln-Schlueter Floor Machine Co.,**

**220 W. Grand Ave., Chicago**

**Ponsell Floor Machine Co.,**

**220 W. 19th St., N.Y.**

**FLOOR WAX**

**American Wax Co., 1325 128th St., College Point, L. I.**

**Baums Castorine Co., 200 Mathew St., Rome, N. Y.**

**Chemical Compounding Corp., 262 Huron St., Brooklyn**

**Davies-Young Soap Co., Dayton, O.**

See page 25

**Eagle Soap Corp., Huntington, Ind.**

See page 28.

**Federal Varnish Co., 337 S. Peoria St., Chicago**

See page 29.

**Franklin Floor Research Corp.,**

**1224 W. Girard Ave., Philadelphia**

**Fuld Bros., 2308 Frederick Ave., Baltimore**

See page 31.

**James Good, Inc., Kensington, Philadelphia**

See page 34.

**Hockwald Chem. Co., 30 Bluxome St., San Francisco**

**Hysam Prods. Co., 2560 Armitage Ave., Chicago**

**Marshall Products, Inc., 806 N. 1st St., St. Louis**

**Palmer Products, Inc., Waukesha, Wis.**

**FLOOR WAX (Cont'd)**

Peck's Prods. Co., 522-40 N. 2nd St.,  
St. Louis  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Standard Oil Co. of Calif., San Francisco  
H. F. Staples Co., Medford, Mass.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Windsor Wax Co., Inc., 50 Church St., N.Y.

**FLOOR WAX (Non-Polishing)**

Chemical Compounding Corp., 262 Huron St.,  
Brooklyn  
Chicago Sanitary Prods. Co.,  
2526 W. Congress St., Chicago  
**Davies-Young Soap Co., Dayton, O.**  
See page 25.  
**Eagle Soap Corp., Huntington, Ind.**  
See page 28.  
**Federal Varnish Co., 337 S. Peoria St., Chicago**  
See page 29.  
Franklin Floor Research Corp.,  
1224 W. Girard Ave., Phila.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
See page 31.  
**James Good, Inc., Kensington, Philadelphia**  
See page 34.  
Hammond Paint & Chem. Co., Beacon, N.Y.  
Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco  
Hysan Prods. Co., 2560 Armitage Ave., Chicago  
Marshall Products, Inc., 806 N. 1st St., St. Louis  
Miracul Wax Co., 1322 Dolman St., St. Louis  
Palmer Prods., Inc. Waukesha, Wisc.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
H. F. Staples Co., Medford, Mass.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

**FLOWER PRODUCTS, ARTIFICIAL (See AROMATIC CHEMICALS)****FLOWER PRODUCTS, NATURAL (See ESSENTIAL OILS)****FLY SPRAYS (see HOUSEHOLD INSECTICIDE SPRAYS)****FORMALDEHYDE***(see also Brokers and Dealers)*

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N. Y.  
Cleveland Cliffs Iron Co.,  
Union Trust Bldg., Cleveland  
Delta Chem. & Iron Co., Wells, Mich.  
**E. I. du Pont de Nemours & Co.,**  
Wilmington, Del. See page 4.  
**James Good, Inc., Kensington, Philadelphia**  
See page 34.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
Cleveland See page 35.  
Wm. S. Gray Co., 342 Madison Ave., N.Y.  
Heyden Chem. Co., 50 Union Sq., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Mallinckrodt Chemical Work, St. Louis, Mo.  
Merck & Co., Rahway, N. J.

**FOSSIL FLOUR (See KIESELGUHR)****FRAMES (Soap)**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
**Hou-hin Machinery Co., Hawthorne, N. J.**  
See page 37.  
**Huber Machine Co., 259 46th St., Brooklyn**  
See page 38.  
Littleford Bros., 451 E. Pearl St., Cincinnati  
**Newman Tallow & Soap Mach. Co.,**  
1051 W. 35th St., Chicago (New & Used)  
See page 44.  
**Stein-Brill Corp., 183 Varick St., N. Y.**  
(New and Used) See page 63.

**FULLERS EARTH**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N. Y.  
Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Fullers Earth Co., 2049 E. 100th St., Cleveland  
Hammill & Gillespie, 225 Broadway, N.Y.  
Harshaw Chemical Co., 1945 E. 97th St.,  
Cleveland  
Industrial Chem. Sales Co., Inc.,  
230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Jas. H. Rhodes & Co., 157 W. Austin Ave.,  
Chicago  
L. A. Salomon & Bro., 216 Pearl St., N.Y.  
Tamms Silica Co., 228 N. La Salle St., Chgo.  
Whittaker, Clark & Daniels, 245 Front St., N.Y.

**FUMIGANTS**

**American-British Chem. Supplies, Inc.,**  
180 Madison Ave., N.Y. See page 10.  
American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Calcyanide Co., Box 307, Grand Central Annex,  
N.Y.  
Carbide & Carbon Chemicals Corp.,  
30 East 42nd St., N.Y.  
**Dow Chemical Co., Midland, Mich.**  
See page 27.  
**E. I. du Pont de Nemours & Co.,**  
Wilmington, Del. See page 4.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
**Koppers Prods. Co., Koppers Bldg.,**  
Pittsburgh, Pa. See page 41.  
Lethelin Products Co., 1 Park Ave., Manhasset,  
N.Y.  
Mechling Bros. Chemical Co.,  
Line St. & Cooper Creek, Camden, N. J.  
**Rohm & Haas Co., Inc., 222 W. Washington**  
Sq., Philadelphia See page 57.  
**White Tar Co., Kearny, N. J.** See page 41.

**GERANIOL (See AROMATIC CHEMICALS)****GERANIUM OIL (See ESSENTIAL OILS)****GERANYL ACETATE (See AROMATIC CHEMICALS)****GIFT SETS (see NOVELTY SOAPS and TOILET SOAPS)****GLASS BOTTLES (See BOTTLES)**

**GLASS JARS (See BOTTLES)**  
**GLUES (see ADHESIVES)**

**GLYCERINE (Refined)**

- Armour & Co., 1355 W. 31st St., Chicago**  
 See page 14.  
 Century Stearic Acid Candle Wks.,  
 22 E. 40th St., N. Y.  
 Colgate-Palmolive-Peet Co., Jersey City, N. J.  
 Cox, Aspden & Fletcher, 39 Cortlandt St.,  
 N.Y. (Import)  
 Harshaw Chemical Co., 1945 E. 97th St.,  
 Cleveland  
 Larkin Company, Buffalo, N.Y.  
 Lever Bros. Co., Cambridge, Mass.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Leo Pasternak, 110 William St., N. Y.  
 (Brokers)  
 Procter & Gamble Co., Cincinnati  
 John T. Stanley Co., 642 W. 30th St., N.Y.  
 Swift & Co., Union Stock Yards, Chicago  
 M. Werk Co., St. Bernard, Cincinnati  
 Allen B. Wrisley Co., 6801 West 65th St.,  
 Chicago

**GLYCERINE DISTILLATION PLANTS**

- E. B. Badger Co., 25 Pitts St., Boston  
 William Garrigue & Co., 9 S. Clinton St.,  
 Chicago  
 Lancaster Iron Works, Lancaster, Pa.  
 Ernest Scott & Co., Fall River, Mass.  
 Swenson Evaporator Co., Harvey, Ill.  
 Wurster & Sanger, 5201 Kenwood Ave., Chicago  
 Zarembo Co., Buffalo, N.Y.

**GREASES**

(see also *Brokers and Dealers*)

- Armour & Co., 1355 W. 31st St., Chicago**  
 See page 14.  
 Belleville Rendering Co., Belleville, Ill.  
 Consolidated Rendering Co., 40 N. Market St.,  
 Boston  
 Cudahy Packing Co., 111 W. Monroe St.,  
 Chicago  
 Darling & Co., 4201 S. Ashland Ave., Chicago  
 Otto A. C. Hagen Co., 929 Ledger Bldg., Phila.  
 Raclin, Snow & Cleaver, 15 William St., N. Y.  
 See page 55.  
 J. H. Redding Co., 17 Battery Pl., N. Y.  
 Louis Stern Sons, Inc., Produce Exchange, N.Y.  
 Theobald Animal By-Prod. Co., Kearny, N.J.  
 Toledo Tallow Co., Toledo, Ohio  
 Waltham Tallow Co., Waltham, Mass.  
 Wilbur-Ellis Co., 17 Battery Pl., N. Y.  
 See inside back cover.  
 Wilson & Co., Union Stock Yards, Chicago  
 Wilson-Martin Co., Swanson St., Phila.  
 Woburn Degreasing Co., 1200 Harrison Ave.,  
 Harrison, N. J.

**GREEN SOAP**

- Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.  
 Baums Castorine Co., 200 Mathew St.,  
 Rome, N. Y.  
 Clifton Chemical Co., 247 Front St., N. Y.  
 See page 21.  
 Davies Young Soap Co., Dayton, O.  
 Chicago  
 See page 25.

**Eagle Soap Corp., Huntington, Ind.**

- See page 23.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
 Genesee Bros., West 48th Pl. & Whipple St.,  
 Chicago  
**James Good, Inc., Kensington, Philadelphia**  
 See page 34.  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Hysan Prods. Co., 2560 Armitage Ave.,  
 Chicago  
 H. Kohnstamm, Inc., 91 Park Pl., N.Y.  
 Kranich Soap Co., 54 Richards St., Brooklyn  
 Laurel Soap Mfg. Co., Tioga, Thompson &  
 Almond Sts., Phila.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Marshall Products, Inc., 806 N. 1st St., St. Louis  
 National Soap Co., Tacoma, Wash.  
**New York Soap Corp., 294 Pearl St., N.Y.**

See page 45.

- Palmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Scholler Bros. & Co., Phila.  
 Werner G. Smith Co., 2191 W. 110th St.,  
 Cleveland  
 Swift & Co., Union Stock Yards, Chicago  
 Tremco Mfg. Co., 393 E. 131st St., Cleveland  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Allen B. Wrisley Co., 6801 W. 65th St.,  
 Chicago  
 Chas. W. Young & Co., Phila.

**GRINDING MACHINERY**

- Abbe Engineering Co., 50 Church St., N.Y.  
 American Pulverizer Co., 18th & Austin Sts.,  
 St. Louis  
 C. O. Bartlett & Snow Co., 6200 Harvard Ave.,  
 Cleveland  
 Blanchard Machine Co., 64 State St.,  
 Cambridge, Mass.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati  
 Gruendler Patent Crusher & Pulverizer Co.,  
 900 N. First St., St. Louis  
 B. F. Gump Co., 431 S. Clinton St., Chicago  
 Houchin Machy. Co., Hawthorne, N.J.  
 See page 37.  
 Huber Machine Co., 259 46th St., Brooklyn  
 See page 38.  
 Kent Machine Works, 137 Gold St., Brooklyn  
 Lancaster Iron Works, Lancaster, Pa.  
 J. M. Lehman Co., 248 W. Broadway, N. Y.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Olsen & Tilgner Mfg. Co., 2276 Elston Ave.,  
 Chicago  
 Raymond Bros. Impact Pulverizer Co.,  
 1302 N. Branch St., Chicago  
 Patterson Foundry & Machine Co.,  
 East Liverpool, O.  
 Stein-Brill Corp., 183 Varick St., N. Y.  
 (Used) See page 63.

**GRINDING MACHINERY (Cont'd)**

F. J. Stokes Machine Co., Philadelphia, Pa.  
 Sturtevant Mill Co., Harrison Sq., Boston  
 Williams Patent Crusher & Pulverizer Co.,  
 2709 N. 9th St., St. Louis

**GUAGES (see INSTRUMENTS)****GUMS**

American Cyanamid & Chem. Corp.,  
 30 Rocketteller Plaza, N. Y.  
**Wm. Benkert & Co., 100 Gold St., N.Y.**  
 See page 19.  
 T. G. Cooper & Co., 47 N. 2nd St., Phila.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago, Ill.  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Stanley Jordan & Co., 11 Water St., N.Y.  
 Murray & Nickell Mfg. Co., 2608 Arthington  
 St., Chicago  
 Neuman-Buslee & Wolfe, 224 W. Huron St.,  
 Chicago, Ill.  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
 Stein, Hall & Co., 285 Madison Ave., N.Y.  
 Thurston & Braidich, 27 Cliff St., N.Y.  
 G. A. Wharry & Co., 15 Moore St., N.Y.

**GUNS, Powder (see BELLOWS)****HAND (Mechanic's) SOAP**

Cincinnati Soap Co., Cincinnati  
 Columbia Soap & Chem. Co., Inc.,  
 324 Leavenworth St., San Francisco  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N. Y.  
**Davies Young Soap Co., Dayton, O.**  
 See page 25.  
 Diamond Soap Co., 1 Lowden St.,  
 Elizabeth, N.J.  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
 J. Eavenson & Sons, Del. & Penn Sts.,  
 Camden, N.J.  
 Hewitt Soap Co., Dayton, O.  
 R. M. Hollingshead Co., 840 Cooper St.,  
 Camden, N.J.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chemical Co., 324 Leavenworth  
 St., San Francisco, Cal.  
 Marshall Products, Inc., 806 N. 1st St., St. Louis  
 Mione Mfg. Co., Collingdale, Pa.  
 North Coast Soap & Chem. Wks.,  
 Seattle, Wash.  
 Palmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 United Cleanser Mfg. Co., 160 Second St.,  
 Cambridge, Mass.  
 Vliet Soap Co., 638 Monroe St., Brooklyn  
 Allen B. Wrisley Co., 6801 West 65th St.,  
 Chicago, Ill.  
 Chas. W. Young & Co., Phila.

**HARDWATER SOAPS (see COCONUT OIL SOAPS)****HELIOTROPIN (See AROMATIC CHEMICALS)****HEXALIN**

E. I. du Pont de Nemours & Co., Inc.,  
 Wilmnigton, Del. See page 4.

**HOLDERS (Deodorizing Block) (see also CANS, FIBRE)**

Cin-Made Corp., (fibre)  
 294 Eggleston Ave., Cincinnati  
**Clifton Chemical Co., 247 Front St., N. Y.**  
 See page 21.  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N. Y.  
**Eagle Soap Co., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
 Garnet Chem. Corp., 911 N. Lumber St.,  
 Allentown, Pa.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chemical Co.,  
 324 Leavenworth St., San Francisco, Cal.  
 Palmer Products, Inc., Waukesha, Wis.  
 Rochester Germicide Co., 16 Dowling Pl.,  
 Rochester, N.Y.  
 Sanitary Supplies Co., P. O. Box 5208, Phila.  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 William Vogel & Bros., 37 S. 9th St.,  
 Brooklyn

**HORTICULTURAL SPRAY BASE (See PETROLEUM BASES)****HOUSEHOLD INSECTICIDE BASE (See PETROLEUM BASES)****HOUSEHOLD INSECTICIDES, LIQUID**

An-Fo Mfg. Co., 3129 Elmwood Ave.,  
 Oakland, Cal.  
**Baird & McGuire, Inc., Holbrook, Mass.**  
 See page 16, 17.  
 Chemical Compounding Corp., 262 Huron St.,  
 Brooklyn  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Cino Chem. Prods. Co., 210 Main St.,  
 Cincinnati, O.  
**Clifton Chemical Co., 247 Front St., N. Y.**  
 See page 21.  
 Columbia Soap & Chem. Co., Inc.,  
 324 Leavenworth St., San Francisco  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
 Dethol Mfg. Co., 922 E St., N.W.,  
 Washington, D.C.  
 C. B. Dolge Co., Westport, Conn.  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
 James Good, Inc., Kensington, Phila.  
 See page 34.  
 Goulard & Olena, 140 Liberty St., N.Y.



**HOUSEHOLD INSECTICIDES, LIQUID  
(Cont'd)**

Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chem. Co.,  
 324 Leavenworth St., San Francisco, Cal.  
**Koppers Products Co.,**  
**Koppers Bldg., Pittsburgh** See page 41.  
 Marshall Products, Inc., 806 N. 1st St., St. Louis  
**McCormick & Co., Inc., Baltimore, Md.**  
 See page 43.  
 Edgar A. Murray Co., 2703 Guoin St., Detroit  
 Panmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Selig Co., 336 Marietta St., Atlanta, Ga.  
 Shores Co., Cedar Rapids, Ia.  
 Standard Oil Co. of Calif., San Francisco  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Vliet & Co., 638 Monroe St., Brooklyn  
**White Tar Co., Kearny, N. J.** See page 41.  
 Robert C. White Co., Falls of Schuylkill,  
 Phila.

**HOUSEHOLD INSECTICIDES,  
POWDERED**

Allaire Woodward & Co., Peoria, Ill.  
 An-Fo Mfg. Co., 3129 Elmwood Ave.,  
 Oakland, Cal.  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
**Derris, Inc., 79 Wall St., N. Y.** See page 26.  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
**James Good, Inc., Kensington, Philadelphia**  
 See page 34.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chem. Co., 324 Leavenworth St.,  
 San Francisco, Cal.  
**Koppers Prods Co., Koppers Bldg.,**  
**Pittsburgh, Pa.** See page 41.  
 Marshall Prods., Inc., 806 N. 1st St., St. Louis  
**McCormick & Co., Inc., Baltimore, Md.**  
 See page 43.  
 McLaughlin Gormley King Co.,  
 1715—5th St., S. E., Minneapolis, Minn.  
 Edgar A. Murray Co., 2703 Guoin St., Detroit  
 Palmer Products, Inc., Waukesha, Wis.  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Ratin Labs., 116 Broad St., N.Y.  
 Selig Co., 336 Marietta St., Atlanta, Ga.  
 Shores Co., Cedar Rapids, Ia.  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
**White Tar Co., Kearny, N. J.** See page 41.

**HYDROGENATED OILS**

Procter & Gamble Co., Cincinnati, O.

Werner G. Smith Co., 2191 W. 110th St.,  
 Cleveland  
 Wesson Oil & Snowdrift Co.,  
 Produce Exchange, N.Y.  
 Wyandotte Oil Co., Wyandotte, Mich.

**HYDROGENATION PLANTS (See OIL  
HYDROGENATION PLANTS)****HYDROSULFITES (Soap Bleaches)**

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N. Y.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
**Cleveland** See page 35.  
 Merrimac Chem. Co., 148 State St., Boston  
**Rohm & Haas Co., Inc.,**  
**222 W. Washington Sq., Phila.** See page 57.  
 Royce Chem. Co., Carlton Hill, N.J.

**HYDROXYCITRONELLAL (See AROMATIC  
CHEMICALS)****INFUSORIAL EARTH (see KIESELGUHR)****INSECT FLOWERS (See PYRETHRUM)****INSECT POWDER (see PYRETHRUM)****INSECT POWDER GUNS (See BELLOWS)****INSECTICIDE SPRAY PERFUMES**

van Ameringen-Haebler, Inc.,  
 315 4th Ave., N. Y. See pages 12, 13.  
 Budd Aromatic Chem. Co.,  
 667 Washington St., N. Y.  
 Compagnie Duval, 121 E. 24th St., N.Y.  
 Compagnie Parento, Croton-on-Hudson, N. Y.  
 Dodge & Olcott Co., 180 Varick St., N.Y.  
 P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
 Evergreen Chemical Co., 160—5th Ave., N.Y.  
**Felton Chemical Co., 603 Johnson Ave.,**  
**Brooklyn, N. Y.** See page 30.  
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
**Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.**  
 See inside front cover, 33.  
 Geo. Lueders & Co., 427 Washington St., N.Y.  
 Magnus, Mabree & Reynard, 32 Cliff St., N.Y.  
 Neumann-Buslee & Wolfe, 224 W. Huron St.,  
 Chicago  
 Pfaltz & Bauer, 300 Pearl St., N.Y.  
 Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Riviera Products Co., 215 W. Ohio St.,  
 Chicago  
 H. C. Ryland, Inc., 161 Water St., N.Y.  
 Wm. G. Sibbach & Co., 201 S. 2nd Ave.,  
 Maywood, Ill.  
 George Silver Import Co., 461—4th Ave., N.Y.  
 Sherwood Petroleum Co., Bush Terminal Bldg.,  
 No. 1, Brooklyn, N.Y.  
 Synflour Scientific Labs., Monticello, N.Y.  
**Ungerer & Co., 13 W. 20th St., N.Y.**  
 See page facing inside front cover, 65.  
 Albert Verley, Inc., 11 E. Austin Ave., Chicago



**INSECTICIDES, SYNTHETIC**

Research Lab., Cedar Rapids, Ia.  
**Rohm & Haas, Inc.,**  
 222 W. Washington Sq., Phila. See page 57.

**INSTRUMENTS**

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland  
 Bausch & Lomb Optical Co., Rochester, N.Y.  
 Bristol Co., Waterbury, Conn.  
 Brown Instrument Co.,  
 Wayne & Windrim Sts., Philadelphia  
 Buffalo Meter Co., 2890 Main St., Buffalo, N.Y.  
 G. M. Davis Regulator Co.,  
 2541 S. Washtenaw, Chicago  
**Eimer & Amend**, 19th St. & 3rd Ave., N.Y.  
 Foxboro Co., Foxboro, Mass.  
 Liquidometer Corp., Long Island City, N.Y.  
 Pneumercator Co., Sperry Bldg., Brooklyn  
 Precision Thermometer Co.,  
 1434 Brandywine St., Philadelphia  
 Republic Flow Meters Co., 2240 Diversey Blvd.,  
 Chicago  
 Taylor Instrument Co., Rochester, N.Y.

**IONONE (Violet Base) (See AROMATIC CHEMICALS)****JAPAN WAX (See WAXES)****JARS, GLASS (See BOTTLES)****JASMIN, ARTIFICIAL (See AROMATIC CHEMICALS)****KAOLIN (See CLAYS)****KEROSENE (See PETROLEUM)****KETTLES**

Alloy Prods. Corp., 221 Madison St.,  
 Waukesha, Wis.  
 Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 Bethlehem Foundry & Machine Co.,  
 Grand Central Bldg., N.Y.  
 Brighton Copper Works., 2163 Western Ave.,  
 Cincinnati  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati  
 Houchin Machinery Co., Hawthorne, N. J.  
 See page 37.  
**Huber Machine Co., 259—46th St., Brooklyn**  
 See page 38.  
 Lancaster Iron Works, 564 S. Prince St.,  
 Lancaster, Pa.  
 J. M. Lehmann Co., 248 W. Broadway, N. Y.  
 Littleford Bros., 443 E. Pearl St., Cincinnati  
 Mixing Equipment Co., 1044 Garson Ave.,  
 Rochester, N.Y.  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago, (Used)  
 See page 44.  
 Patterson Foundry & Machine Co.,  
 East Liverpool, O.  
 Pfaudler Co., 89 East Ave., Rochester, N.Y.

Sowers Mfg. Co., 1296 Niagara St.,  
 Buffalo, N.Y.  
 F. J. Stokes Mach. Co., Philadelphia, Pa.  
 Struthers-Weils Co., Warren, Pa.  
 Stuart & Peterson Co., Burlington, N. J.  
 H. B. Trout Co., 240 Ohio St., Buffalo, N.Y.

**KIESELGUHR (Infusorial Earth)**

American Cyanamid & Chem. Corp.,  
 30 Rocketteller Plaza, N. Y.  
 Chas. B. Chrystal Company, 11 Park Pl., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago, Ill.  
 Hammill & Gillespie, 225 Broadway, N.Y.  
 Industrial Chem. Sales Co., Inc.,  
 230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 R. F. Revson Co., 91—7th Ave., N.Y.  
 L. A. Salomon & Bro., 216 Pearl St., N.Y.  
 Tamms Silica Co., 228 N. La Salle St., Chicago  
 Whittaker, Clark & Daniels, 245 Front St., N.Y.  
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

**KITS (Wooden) (see PAILS, WOODEN)****LABELING MACHINERY (Bottles)**

Burt Machine Co., Baltimore, Md.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Economic Machinery Corp., Worcester, Mass.  
 Edward Ermold Co., 652-64 Hudson St., N.Y.  
 McDonald Engineering Corp., 220 Varet St.,  
 Brooklyn, N.Y.  
 National Labeling Machine Co., 358—4th Ave.,  
 Long Island City, N.Y.  
 New Jersey Machine Corp., Hoboken, N.J.  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.  
 Potdevin Machine Co., 1224—38th St.,  
 Brooklyn (hand)  
 F. B. Redington Co., 112 S. Sangamon St.,  
 Chicago  
**Stein-Brill Corp., 183 Varick St., N. Y.**  
 (Used) See page 63.

**LABELING MACHINES (Boxes & Cakes)**

**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 McDonald Engineering Corp., 220 Varet St.,  
 Brooklyn, N.Y.  
 New Jersey Machine Corp., Hoboken, N.J.  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.  
**Stein-Brill Corp., 183 Varick St., N. Y.**  
 (Used) See page 63.  
**Stokes & Smith Co., Summerdale, Phila., Pa.**  
 See page 64.

**LABELING MACHINERY (Cans)**

Burt Machine Co., Baltimore  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.

**LABELING MACHINERY (Cans) (Cont'd)**

- Fred H. Knapp Corp., Ridgewood, N. J.  
 J. L. Ferguson Co., Joliet, Ill.  
 McDonald Engineering Corp., 220 Varet St., Brooklyn, N.Y.  
 New Jersey Machine Corp., Hoboken, N.J.  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 See pages 48, 49.  
 Potdevin Machine Co., 1224—38th St., Brooklyn (hand)  
 F. B. Redington Co., 112 S. Sangamon St., Chicago  
**Stein-Brill Corp., 183 Varick St., N. Y.**  
 (Used) See page 63.

**LABELS**

- American Lithographic Co., 52 E. 19th St., N.Y.  
 Dennison Mfg. Co., Framingham, Mass.  
 Foxon Co., Providence, R. I.  
 Henderson Lithographing Co., Norwood, Cincinnati  
 R. J. Kittredge Co., 812 W. Superior St., Chicago  
 Richard J. Krause, L. I. C., N. Y.  
 U. S. Printing & Litho. Co., Cincinnati, O.

**LABORATORIES, CONSULTING (see Consultants)****LABORATORY APPARATUS**

- Alsop Engineering Corp., 39 W. 60th St., N. Y.  
 Beach-Russ Co., 50 Church St., N.Y.  
 Central Scientific Co., 460 E. Ohio St., Chicago  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Eimer & Amend, 19th St. & 3rd Ave., N.Y.  
 Empire Lab. Supply Co., 218 E. 37th St., N.Y.  
 Fisher Scientific Co., Pittsburgh  
 Emil Greiner Co., 55 Van Dam St., N.Y.  
 Laboratory Construction Co., 1111 Holmes St., Kansas City, Mo.  
 J. M. Lehmann Co., 248 W. Broadway, N.Y.  
**Newman Tallow & Soap Machy. Co.,**  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
 Scientific Materials Co., Pittsburgh  
 F. J. Stokes Machine Co., Tabor Rd., Phila.  
 Arthur H. Thomas Co., Wash Sq., Phila.  
 Will Corp., Rochester, N.Y.

**LABORATORY CHEMICALS**

- J. T. Baker Chemical Co., Phillipsburg, N. J.  
**General Chemical Co., 40 Rector St., N.Y.**  
 See page 32.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Harshaw Chemical Co., 1945 E. 97th St., Cleveland  
 Mallinckrodt Chemical Works, 3600 N. 2nd St., St. Louis  
 Merck & Co., Rahway, N. J.  
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
 Sterling Products Co., Easton, Pa.

**LANOLIN**

- Bopf-Whittam Corp., Westfield, N.J.

- A. C. Drury & Co., 219 East North Water St., Chicago, Ill.  
 Charles L. Huisking, Inc., 155 Varick St., N.Y.  
 Hummel Chemical Co., 90 West St., N.Y.  
 Adolphe Hurst & Co., 420 Lexington Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Merck & Co., Rahway, N. J.  
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

**LAUNDRY BLUE**

- Fezandie & Sperrle, 205 Fulton St., N.Y.  
 Interstate Color Co., 5 Beekman St., N.Y.  
 National Aniline & Chemical Co., 40 Rector St., N.Y.  
**Pylam Products Co., 799 Greenwich St., N.Y.**  
 See page 54.

**LAUNDRY SOAP, CAKE**

- Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.  
 Cincinnati Soap Co., Cincinnati, O.  
 Du Bois Soap Co., Cincinnati, O.  
 J. Eavenson & Sons, Del. & Penn St., Camden, N. J.  
 Fels & Co., Philadelphia  
 Hewitt Soap Co., Dayton, O.  
 Holman Soap Co., 3100 Fox St., Chicago  
 Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Manhattan Soap So., Bristol, Pa.  
 National Soap Co., 357 S. 25th St., Tacoma, Wash.  
 Newell Gutrad Co., 350 Fremont St., San Francisco, Cal.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Procter & Gamble Co., Cincinnati  
 North Coast Chem. & Soap Wks., Seattle Wash.  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Swift & Co., Union Stock Yards, Chicago  
 Vliet Soap Co., 63 Monroe St., Brooklyn  
 Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.  
 M. Werk Co., St. Bernard, Cincinnati  
 Allen B. Wisley Co., 6801 W. 65th St., Chicago, Ill.  
 Chas. W. Young & Co., Phila.

**LAUNDRY SOAP, CHIP**

- Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.  
 Cincinnati Soap Co., Cincinnati, O.  
 Du Bois Soap Co., Cincinnati, O.  
 J. Eavenson & Sons., Del. & Penn. Sts., Camden, N. J.  
 Harris Soap Co., Buffalo, N.Y.  
 Haskins Bros. & Co., Sioux City, Iowa  
 Hewitt Soap Co., Dayton, Ohio  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Lightfoot Schultz Co., 1412 Park Ave., Hoboken, N. J.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Nat'l Milling & Chem. Co., Manayunk, Phila.  
 National Soap Co., 357 South 25th St., Tacoma, Wash.  
 North Coast Soap & Chem. Wks., Seattle, Wash.

**LAUNDRY SOAP, CHIP (Cont'd)**

Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Procter & Gamble Co., Cincinnati  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Swift & Co., Union Stock Yards, Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 M. Werk Co., St. Bernard, Cincinnati  
 Allen B. Wrisley Co., 6801 W. 65th St.,  
 Chicago, Ill.  
 Chas. W. Young & Co., Phila.

**LAUNDRY SOAP, POWD. AND GRAN.**

American Soap Powder Wks.,  
 100 Van Dyke St., Brooklyn, N.Y.  
 Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.  
 Du Bois Soap Co., Cincinnati, O.  
 J. Eavenson & Sons, Del. & Penn. Sts.,  
 Camden, N. J.  
 Hewitt Soap Co., Dayton, Ohio  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Lever Bros. Co., Cambridge, Mass.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 Nat'l Milling & Chem. Co., Manayunk, Phila.  
 National Soap Co., 357 South 25th St.,  
 Tacoma, Wash.  
 North Coast Soap & Chem. Wks.,  
 Seattle, Wash.  
 Paper Makers Chemical Corp.,  
 Kalamazoo, Mich.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Procter & Gamble Co., Cincinnati  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Swift & Co., Union Stock Yards, Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Allen B. Wrisley Co., 6801 W. 65th St.,  
 Chicago, Ill.  
 Chas. W. Young & Co., Phila.

**LAUNDRY SODA, see SODA****LAUNDRY SOURS (Fluoride)**

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 American Fluoride Corp.,  
 151 W. 19th St., N.Y.  
 Bowker Chem. Co., 50 Church St., N.Y.  
 Harshaw Chemical Co., 1945 E. 97th St.,  
 Cleveland  
 Innis, Speiden & Co., 117 Liberty St., N.Y.  
 See page 40.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
 Victor Chemical Wks., 141 W. Jackson Blvd.,  
 Chicago

**LAURYL ALCOHOL**

E. I. Du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4  
 Michel Export Co., 95 Broad St., N.Y.

**LAVENDER OIL (See ESSENTIAL OILS)****LECITHIN**

American Lecithin Corp., 11 W. 42nd St., N.Y.  
 Digestive Ferments Co., 920 Henry St., Detroit  
 R. W. Greeff & Co., 10 E. 40th St., N.Y.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Wilson Labs., 4221 S. Western Blvd., Chicago

**LEMON OIL (See ESSENTIAL OILS)****LEMONGRASS OIL (See ESSENTIAL OILS)****LINALOE OIL (See ESSENTIAL OILS)****LINALOOL (See AROMATIC CHEMICALS)****LINALYL ACETATE (See AROMATIC CHEMICALS)****LINERS (see BAG LINERS, BARREL LINERS, ETC.)****LINING MACHINERY (Cartons)**

Pneumatic Scale Corp., Norfolk Downs, Mass.  
 See pages 48, 49  
 F. B. Redington Co., 112 S. Sangamon St.,  
 Chicago

**LINSEED OIL**

(see also Brokers and Dealers)

Archer-Daniels-Midland Corp.,  
 Minneapolis, Minn.  
 William O. Goodrich Co., Milwaukee, Wis.  
 Spencer Kellogg & Sons, Buffalo, N.Y.  
 Kelloggs & Miller, Amsterdam, N.Y.  
 Minnesota Linseed Oil Co.,  
 Minneapolis, Minn.

**LINSEED OIL SOAP**

Baums Castorine Co., 200 Mathew St.,  
 Rome, N.Y.  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.  
 Davies-Young Soap Co., Dayton, O.  
 See page 25.  
 Eagle Soap Corp., Huntington, Ind.  
 See page 28.  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.  
 Genseke Bros., West 48th Pl. & Whipple St.,  
 Chicago  
 James Good, Inc., Kensington, Philadelphia  
 See page 34.  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chemical Co., 30 Bluxome St.,  
 San Francisco  
 Jansen Soap & Chemical Co.,  
 324 Leavenworth St., San Francisco, Cal.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Kranich Soap Co., 54 Richard St.,  
 Brooklyn, N.Y.

**LINSEED OIL SOAP (Cont'd)**

Laurel Soap Mfg. Co., Tioga & Almond Sts., Philadelphia  
 Marshall Products, Inc., 806 N. 1st St., St. Louis  
 Newell Guttradt Co., 350 Fremont St., San Francisco, Calif.  
**New York Soap Corp., 294 Pearl St., N.Y.**  
*See page 45.*  
 North Coast Chem. & Soap Wks., Seattle, Wash.  
 Palmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Geo. A. Schmidt Co., 236 W. North Ave., Chicago, Ill.  
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago  
 Tremco Mfg. Co., 393 E. 131st St., Cleveland  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.  
 Chas. W. Young & Co., Phila.

**LIQUID SOAP BASE**

Antiseptol Liquid Soap Co., 5424 North West Highway, Chicago  
**Armour Soap Wks., 1355 W. 31st St., Chicago**  
*See page 14.*  
 Baums Castorine Co., 200 Mathew St., Rome, N.Y.  
 Cincinnati Soap Co., Cincinnati  
**Clifton Chemical Co., 247 Front St., N.Y.**  
*See page 21.*  
 Columbia Soap & Chem. Co., Inc., 217 Clara St., San Francisco  
 James Counts Soap Co., 2nd & Washington Ave., St. Louis  
 Creco Co., Inc., Creco Bldg., Long Island City, N.Y.  
**Davies-Young Soap Co., Dayton, O.**  
*See page 25.*  
 Eagle Soap Corp., Huntington, Ind.  
*See page 28.*  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
*See page 31.*  
**James Good, Inc., Kensington, Philadelphia**  
*See page 34.*  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chemical Co., 30 Bluxome St., San Francisco  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Jansen Soap & Chemical Co., 324 Leavenworth St., San Francisco, Cal.  
 Los Angeles Soap Co., Los Angeles, Calif.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Kranich Soap Co., 54 Richards St., Brooklyn  
 Philadelphia  
 Laurel Soap Mfg. Co., Tioga & Almond Sts., Marshall Products, Inc., 805 N. 1st St., St. Louis  
 National Oil Products Co., Harrison, N.J.  
 National Soap Co., 357 South 25th St., Tacoma, Wash.  
**New York Soap Co., 294 Pearl St., N.Y.**  
*See page 48.*  
 North Coast Chemical & Soap Wks., Seattle, Wash.  
 Oil-Kraft, Inc., 3330 Beekman St., Cincinnati  
 Palmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Inc., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co., 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave., Chicago

Selig Co., 336 Marietta St., Atlanta, Ga.  
 Tremco Mfg. Co., 393 E. 131st St., Cleveland  
 U. S. Sanitary Specialties Corp., 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St., Cambridge, Mass.  
 Allen B. Wisley Co., 6801 W. 65th St., Chicago, Ill.

**LIQUID SOAP COLORS***(see also Perfuming Compounds)*

American Aniline Products, Inc., 50 Union Sq., N.Y.  
 Dyestuffs & Chemicals, Inc., 11th & Monroe Sts., St. Louis  
 Fezandie & Sperrle, 205 Fulton St., N.Y.  
 Interstate Color Co., Inc., 5 Beekman St., N.Y.  
 Leeben Chem. Co., 389 Washington St., N.Y.  
**Pylam Products Co., 799 Greenwich St., N.Y.**  
*See page 54.*  
 Sandoz Chem. Wks., 61 Van Dam St., N.Y.

**LIQUID SOAP PERFUMES**

**van Ameringen-Haebler, Inc., 315-4th Ave., N.Y.**  
*See pages 12, 13.*  
 Budd Aromatic Chem. Co., 667 Washington St., N.Y.  
 Antoine Chiris Co., 147 Waverly Pl., N.Y.  
 Compagnie Duval, 121 E. 24th St., N.Y.  
 Compagnie Parento, Inc., Croton-on-Hudson, N.Y.  
 Dodge & Olcott Co., 180 Varick St., N.Y.  
 P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
 A. C. Drury & Co., 219 East North Water St., Chicago  
**E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.**  
*See page 4.*  
 Evergreen Chemical Co., 160 Fifth Ave., N.Y.  
**Felton Chemical Co., 603 Johnson Ave., Brooklyn**  
*See page 30.*  
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
**Givaudan-Delawanna, Inc., 80-5th Ave., N.Y.**  
*See inside front cover, 33.*  
 Industrial Organics, 131 E. 45th St., N.Y.  
 Lautier Fils, 47 Cliff St., N.Y.  
 Pierre Lemoine, Inc., 200 Varick St., N.Y.  
 Geo. Lueders & Co., 427 Washington St., N.Y.  
 Magnus, Mabec & Reynard, 32 Cliff St., N.Y.  
 A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.  
 Neuman-Buslee & Wolfe, 224 W. Horn St., Chicago  
 Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.  
 Riviera Products Co., 215 W. Ohio St., Chicago  
 H. C. Ryland, Inc., 161 Water St., N.Y.  
 Edwin Seebach Co., 912 Broadway, N.Y.  
 C. A. Sequin Co., 500 N. Dearborn St., Chi.  
 Wm. G. Sibbach & Co., 201 S. 2nd Ave., Maywood, Ill.  
 Synfleur Scientific Labs., Monticello, N.Y.  
**Ungerer & Co., 13 W. 20th St., N.Y.**  
*See page facing inside front cover, 65.*  
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

**LIQUID SOAPS***(see also Medicinal Soaps, Coconut Oil Soaps, etc.)*

Antiseptol Liquid Soap Co., 5424 N. W. Highway, Chicago  
**Armour Soap Wks., 1355 W. 31st St., Chicago**  
*See page 14.*

**LIQUID SOAPS (Cont'd)**

- Baums Castorine Co., 20 Mathew St.,  
Rome, N.Y.  
Bristol Myers Co., 90 West St., N.Y.  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Colgate-Palmolive-Peet Co., Jersey City, N.J.  
Columbia Soap & Chem. Co., Inc., 217 Clara St.,  
San Francisco  
James Counts Soap Co.,  
2nd & Washington Ave., St. Louis.  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Davies-Young Soap Co., Dayton, O.  
See page 25.  
Diamond Soap Co., 1 Lowden St.,  
Elizabeth, N. J.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
J. Eavenson & Sons, Del. & Penn Sts.  
Camden, N.J.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
James Good, Inc., Kensington, Philadelphia  
See page 34.  
Green Oil Soap Co., 166 N. Curtis St., Chicago  
Harley Soap Co., 2832 E. Pacific St., Phila.  
Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Hysan Prods. Co., 2560 Armitage Ave., Chicago  
Jansen Soap & Chemical Co.,  
324 Leavenworth St., San Francisco, Cal.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Kranich Soap Co., 54 Richards St., Brooklyn  
Laurel Soap Mfg. Co., Tioga & Almond Sts.,  
Philadelphia  
Los Angeles Soap Co., Los Angeles  
Marshall Products, Inc., 806 N. 1st St., St. L.  
New York Soap Corp., 294 Pearl St., N.Y.  
See page 45.  
North Coast Chem. & Soap Wks.,  
Seattle, Wash.  
Oil-Kraft, Inc., 3330 Beekman St., Cincinnati  
Palmer Products, Inc., Waukesha, Wis.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Theo. B. Robertson Prod. Co.,  
700 W. Division St., Chicago  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
Selig Co., 336 Marietta St., Atlanta, Ga.  
Shores Co., Cedar Rapids, Ia.  
John T. Stanley Co., 640 W. 30th St., N.Y.  
Swift & Co., Union Stock Yards, Chicago  
Tremco Mfg. Co., 303 E. 131st St., Cleveland  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
Allen B. Wrisley Co., 6801 W. 65th St.,  
Chicago, Ill.  
Chas. W. Young & Co., Phila.

**MACHINERY (USED) (see USED MACHINERY)****MAGNESIUM STEARATE (see STEARATES)****MARSEILLES SOAP (see TEXTILE SOAPS, OLIVE OIL SOAPS)****MECHANIC'S SOAP (see HAND SOAP)****MEDICINAL SOAPS, CAKE**

- Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Cincinnati Soap Co., Cincinnati  
J. Eavenson & Sons, Del. & Penn Sts.,  
Camden, N. J.  
Hewitt Soap Co., Dayton, O.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Los Angeles Soap Co., Los Angeles  
Newell Gutradt Co., 350 Fremont St.,  
San Francisco, Cal.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
John T. Stanley Co., 640 W. 30th St., N.Y.  
Allen B. Wrisley Co., 6801 W. 65th St.,  
Chicago

**MEDICINAL SOAPS, LIQUID**

- Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Bristol-Myers Co., 90 West St., N.Y.  
Cincinnati Soap Co., Cincinnati  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
J. Eavenson & Sons, Del. & Penn Sts.,  
Camden, N. J.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
James Good, Inc., Kensington, Philadelphia  
See page 34.  
Jansen Soap & Chemical Co.,  
324 Leavenworth St., San Francisco, Cal.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Kranich Soap Co., 54 Richards St., Brooklyn  
Los Angeles Soap Co., Los Angeles  
Marshall Products, Inc., 806 N. 1st St., St. Louis  
New York Soap Corp., 294 Pearl St., N.Y.  
See page 45.  
Palmer Products, Inc., Waukesha, Wis.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
Shores Co., Cedar Rapids, Ia.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
Allen B. Wrisley Co., 6801 W. 65th St.,  
Chicago

**MENTHOL**

(see also Essential Oils)

- H. J. Baker & Bros., 271 Madison Ave., N.Y.  
Wm. Benkert & Co., 100 Gold St., N.Y.  
See page 19.  
S. W. Bridges & Co., 70 Pine St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Hosken & Co., 56 Pine St., N.Y.  
Stanley Jordan & Co., 11 Water St., N.Y.  
Magnus, Mabree & Reynard, Inc.,  
32 Cliff St., N.Y.



**MENTHOL (Cont'd)**

McKesson & Robbins, Inc., 79 Cliff St., N.Y.  
 Mitsui & Co., 350—5th Ave., N.Y.  
 Sherka Chemical Co., 86 Orange St.,  
 Bloomfield, N.J.  
 S. Suzuki & Co., 230 Park Ave., N.Y.

**MERCURY BICHLORIDE (Corrosive Sub-  
limate)**

General Chem. Co., 40 Rector St., N.Y.  
 See page 32.  
 Heyden Chemical Corp., 50 Union Sq., N.Y.  
 Mallinckrodt Chemical Works, St. Louis  
 Merck & Co., Rahway, N. J.  
 New York Quinine & Chem. Wks.,  
 N. 11th & Berry Sts., Brooklyn  
 Chas. Pfizer & Co., 81 Maiden Lane, N.Y.

**METAL CAPS (see CAPS, METAL)****METAL POLISH (see POLISH, METAL)****METERS (see INSTRUMENTS)****METHYL ANTHRANILATE**

(see also *Aromatic Chemicals*)

Dow Chemical Co., Midland, Mich.  
 See page 27.  
 Van Dyk & Co., 57 Wilkinson Ave.,  
 Jersey City, N.J.

**METHYL SALICYLATE (Artificial  
Wintergreen)**

(see also *Aromatic Chemicals*)

Dow Chemical Co., Midland, Mich.  
 See page 27.  
 Heyden Chemical Corp., 50 Union Sq., N.Y.  
 Merck & Co., Rahway, N.J.  
 Monsanto Chemical Works, 1724 S. 2nd St.,  
 St. Louis

**MILLS, PEBBLE (See GRINDING  
MACHINERY)****MILLS, SOAP FLAKE**

Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 Houchin Machinery Co., Hawthorne, N. J.  
 See page 37.  
 Huber Machine Co., 259—46th St., Brooklyn  
 See page 38.  
 J. M. Lehmann Co., 250 Broadway, N.Y.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 See page 63.

**MILLS, SOAP POWDER**

Abbe Engineering Co., 50 Church St., N.Y.  
 Blanchard Machine Co., Cambridge, Mass.

Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 Houchin Machinery Co., Hawthorne, N. J.  
 See page 37.  
 J. M. Lehmann Co., 250 W. Broadway, N.Y.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
 Patterson Foundry & Mach. Co.,  
 E. Liverpool, Ohio  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 (Used) See page 63.

**MILLS, TOILET SOAP**

Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 Houchin Machinery Co., Hawthorne, N. J.  
 See page 37.  
 Huber Machine Co., 259—46th St., Brooklyn  
 See page 38.  
 J. M. Lehmann Co., 250 W. Broadway, N.Y.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 (Used) See page 63.

**MINERAL OIL, WHITE, see WHITE  
MINERAL OIL****MINERAL SOAP STOCK, see  
PETROLATUM****MIRBANE OIL (Nitrobenzene)**

(see also *Essential Oils*)

Calco Chemical Co., Bound Brook, N. J.  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 Monsanto Chemical Works, 1724 S. 2nd St.,  
 St. Louis  
 National Aniline & Chemical Co.,  
 40 Rector St., N.Y.  
 Naugatuck Chemical Co., 1790 Broadway, N.Y.

**MIXERS (Portable)**

Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 Beach-Russ Co., 50 Church St., N.Y.  
 Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Chicago  
 Ertel Eng. Co., 120 E. 16th St., N.Y.  
 Houchin Machinery Co., Hawthorne, N. J.  
 See page 37.  
 Huber Machine Co., 259—46th St., Brooklyn  
 See page 38.  
 Kent Machine Works, 37 Gold St., Brooklyn  
 Frank B. Lomax Co., 365 W. Oak St., Chgo.  
 Mixing Equipment Co., Inc., 1024 Garson Ave.,  
 Rochester, N.Y.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago, (New & Used)  
 See page 44.  
 Patterson Fdy. & Mch. Co., E. Liverpool, O.  
 Pfaudler Co., 89 East Ave., Rochester, N.Y.  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 (Used) See page 63.



**MIXING MACHINERY (Change Can)**

- Abbe Engineering Co., 50 Church St., N.Y.  
 Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 Arthur Colton Co., Detroit, Mich.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati  
**Huber Machine Co., 259—46th St., Brooklyn**  
 See page 38.  
 Kent Machine Works, 39 Gold St., Brooklyn  
 Lancaster Iron Works, Lancaster, Pa.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Patterson Foundry & Mch. Co.,  
 E. Liverpool, Ohio  
 Chas. Ross & Son Co.,  
 148 Classon Ave., Brooklyn  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.  
 Waterville Fndry. & Machine Co.,  
 Waterville, N.Y.

**MIXING MACHINERY (Dry Products)**

- Abbe Engineering Co., 50 Church St., N.Y.  
 Besser Mfg. Co., Alpena, Mich.  
 Blystone Mfg. Co., Cambridge Springs, Pa.  
 Chain Belt Co., Milwaukee, Wis.  
 Consol. Concrete Machinery Corp.,  
 Adrian, Mich.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 Construction Machinery Co., Waterloo, Iowa  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati  
 W. E. Dunn Mfg. Co., Holland, Mich.  
 J. B. Foote Foundry Co., Fredericktown, O.  
 B. F. Gump Co., 431 S. Clinton St., Chicago  
**Houchin Machy. Co., Hawthorne, N.J.**  
 See page 37.  
 S. Howes Co., Inc., Silver Creek, N.Y.  
**Huber Machine Co., 259—46th St., Brooklyn**  
 See page 38.  
 E. B. Kelley Co., 130 W. 42nd St., N.Y.  
 Koehring Co., 31st St. and Concordia Ave.,  
 Milwaukee, Wis.  
 Lancaster Iron Works, Lancaster, Pa.  
 Lansing Co., Lansing, Mich.  
 MacLellan Mixer Co., Owensboro, Ky.  
**Newmann Tallow & Soap Machinery Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Ransome Concrete Machinery Co.,  
 Dunellen, N. J.  
 Republic Iron Works, Tecumseh, Mich.  
 Ernest Scott & Co., Fall River, Mass.  
 T. L. Smith Co., Milwaukee, Wis.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 F. J. Stokes Machine Co., Philadelphia, Pa.  
 Struthers-Wells Corp., Warren, Pa.  
 Vol-u-meter Co., 710 Ohio St., Buffalo

**MIXING MACHINERY (General)**

- Alsop Engineering Corp., 39 W. 60th St., N.Y.  
 Baker-Perkins Co., 250 Park Ave., N.Y.  
 Beach-Russ Co., 50 Church St., N.Y.  
 Arthur Colton Co., Detroit  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. H. Day Co., 1144 Harrison Ave., Cincinnati

**Houchin Machy. Co., Hawthorne, N.J.**

See page 37.

S. Howes Co., Inc., Silver Creek, N.Y.

**Huber Machine Co., 259—46th St., Brooklyn**

See page 38.

Kent Machine Works, 37 Gold St., Brooklyn

Lancaster Iron Works, Lancaster, Pa.

J. M. Lehmann Co., 248 West B'way, N.Y.

Littleford Bros., 443 E. Pearl St., Cincinnati

Mixing Equipment Co., Inc., 1024 Garson Ave.,  
 Rochester, N.Y.

**Newman Tallow & Soap Machy. Co.,**

**1051 W. 35th St., Chicago (Used)**  
 See page 44.

Patterson Foundry & Mach. Co.,

East Liverpool, Ohio

Pfadtler Co., 89 East Ave., Rochester, N.Y.

Read Machinery Co., York, Pa.

Chas. Ross & Son Co.,

148 Classon Ave., Brooklyn

Ernest Scott & Co., Fall River, Mass.

Sowers Mfg. Co., 1296 Niagara St.,

Buffalo, N.Y.

**Stein-Brill Corp., 183 Varick St., N.Y.**

(Used) See page 63.

F. J. Stokes Mach. Co., Philadelphia, Pa.

Struthers-Wells Co., Warren, Pa.

Turbo Mixer Corp., 250 W. 43rd St., N.Y.

Vol-U-Meter Co., 210 Ohio St., Buffalo, N.Y.

Waterville Foundry & Machine Co.,

Waterville, N.Y.

**MIXING TANKS (see TANKS, WOODEN,  
STEEL and GLASS, MIXING)****MONTAN WAX (See WAXES)****MOTH PROOFING COMPOUNDS**

- American Cyanamid & Chemicals Corp.,  
 30 Rockefeller Plaza, N.Y.  
**E. I. Du-Pont de Nemours & Co.,**  
**Wilmington, Del.** See page 4.  
 General Dyestuffs Corp., 230—5th Ave., N.Y.  
 R. W. Greeff & Co., 10 E. 40th St., N.Y.  
 J. V. Hopkins & Co., 220 Broadway, N.Y.  
 Merck & Co., Rahway, N.J.  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago

**MOTH SPRAYS (See INSECTICIDES,  
LIQUID)****MOP HANDLES**

- Algoma Mfg. Co., Green Bay, Wis.  
 Amer. Standard Mfg. Co., 2509 Lime St.,  
 Chicago  
 Stanley H. Coffin, 12 Pearl St., Boston  
 Continental Car-Na-Var Corp., Brazil, Ind.  
 Eagle Woodenware Mfg. Co., Hamilton, O.  
 Erie Mop & Wringer Co., East Syracuse, N.Y.  
 Howard Dustless Duster Co., Boston  
 W. E. Kautenberg Co., Freeport, Ill.  
 Massasoit Mfg. Co., 350 Bway., N.Y.  
 Palmer Prods., Inc., Waukesha, Wis.  
 Sanitary Mfg. Co., 926 Ft. Wayne Ave.,  
 Indianapolis  
 Silver-Chamberlin Co., Clayton, NY.

**MOP WRINGERS AND PAILS**

Stanley H. Coffin, 12 Pearl St., Boston  
 Colson Mfg. Co., Elyria, O.  
 Dobbins Mfg. Co., North St. Paul, Minn.  
 Eagle Woodenware Mfg. Co., Hamilton, Ohio  
 Geuder, Paesche & Frey, Milwaukee, Wis.  
 Illinois Duster Co., 1944 Webster Ave., Chgo.  
 S. C. Lawlor Co., 124 N. Curtis St., Chicago  
 Muskegon Sanitary Supply Co.,  
 Muskegon Heights, Mich.  
 Palmer Prods., Inc., Waukesha, Wis.  
 Sanitary Mfg. Co., 926 Ft. Wayne Ave.,  
 Indianapolis  
 Tarbox Lever Corp., 61 Chandler St., Buffalo  
 White Mop Wringer Co., Fultonville, N.Y.

**MOPPING TANKS AND TRUCKS**

Eagle Woodenware Mfg. Co., Hamilton, O.  
 S. C. Lawlor Co., 124 N. Curtis St., Chicago  
 F. H. Lawson Co., Cincinnati  
 Palmer Prods., Inc., Waukesha, Wis.  
 White Mop Wringer Co., Fultonville, N.Y.

**MOPS**

Alabama Broom & Mattress Co.,  
 Huntsville, Ala.  
 Algoma Mfg. Co., Green Bay, Wis.  
 Amer. Standard Mfg. Co., 2509 Lime St.,  
 Chicago  
 Burdett-Rose Mfg. Co., 6100 Independence Rd.,  
 Kansas City, Mo.  
 California Cotton Mills Co., Oakland, Calif.  
 Chattanooga Broom & Mop Co.,  
 Chattanooga, Tenn.  
 Clark Bros. Mfg. Co., 34 N. Front St., Phila.  
 Stanley H. Coffin, 12 Pearl St., Boston, Mass.  
 Continental Car-Na-Var Corp., Brazil, Ind.  
 Eagle Woodenware Mfg. Co., Hamilton, O.  
 Howard Dustless Duster Co., Boston, Mass.  
 W. E. Kautenberg Co., P. O. Box 255,  
 Freeport, Ill.  
 Klenzall Mfg. Co., Atlanta, Ga.  
 Palmer Prods., Inc., Waukesha, Wis.  
 Pioneer Mfg. Co., Cleveland, Ohio  
 Ruben Woodfin'g & Prod. Co., 500 W. 7th St.,  
 Kansas City, Mo.  
 Sanitary Mfg. Co., 926 Ft. Wayne Ave.,  
 Indianapolis  
 Silver-Chamberlain Co., Clayton, N. J.  
 T. C. Smyth Mfg. Co., Union City, Ind.  
 Tate Mfg. Co., Boston, Mass.  
 M. J. Toohey & Co., Fall River, Mass.  
 Tuscaloosa Mills, Tuscaloosa, Ala.  
 Yocma Mills, Water Valley, Miss.

**MOSQUITO LARVAECIDES**

Baird & McGuire, Inc., Holbrook, Mass.  
 See pages 16, 17.  
 Chemical Supply Co., 2450 Canal Rd., Cleveland  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.  
 Creco Co., Inc., Creco Bldg., L. I. City, N.Y.  
 Eagle Soap Corp., Huntington, Ind.  
 See page 28.  
 Fuld Bros, 2308 Frederick Ave., Baltimore  
 See page 31.  
 Hockwald Chemical Co., 30 Bluxome St.,  
 San Francisco  
 William E. Jordan & Bro.,  
 2590 Atlantic Ave., Brooklyn  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago

Koppers Products Co., Koppers Bldg.,  
 Pittsburgh

See page 41.  
 Marshall Prods., Inc., 806 N. 1st St., St. Louis  
 McCormick & Co., Inc., Baltimore, Md.

See page 43.

Merck & Co., Rahway, N.J.  
 North Coast Chem. & Soap Wks.,  
 Seattle, Wash.  
 Palmer Prods., Inc., Waukesha, Wis.  
 Sherwood Petroleum Co., Bush Terminal Bldg.,  
 No. 1, Brooklyn  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 White Tar Co., Kearny, N. J.

See page 41.

**MOTTLED SOAPS**

Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.

Cincinnati Soap Co., Cincinnati  
 Hewitt Soap Co., Dayton, O.  
 Lightfoot Schultz Co., Hoboken, N. J.  
 Los Angeles Soap Co., Los Angeles  
 National Soap Co., P. O. Box 1613,  
 Tacoma, Wash.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Geo. A. Schmidt Co., 236 W. North Ave., Chgo.  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 M. Werk Co., Cincinnati, O.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chgo.

**MUSKS, ARTIFICIAL (See AROMATIC CHEMICALS)****NAPHTHA, see SOLVENT NAPHTHA****NAPHTHALENE**

American-British Chem. Supplies, Inc.,  
 180 Madison Ave., N.Y. See page 10.  
 Barrett Co., 40 Rector St., N.Y. See page 18.  
 S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh  
 Dominion Tar & Chem. Co., Ltd.,  
 430 Canada Cement Bldg., Montreal  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 Innis, Speiden & Co., 117 Liberty St., N.Y.  
 See page 40.

William E. Jordan & Bro.,  
 2590 Atlantic Ave., Brooklyn  
 Koppers Products Co., Koppers Bldg.,  
 Pittsburgh See page 41.  
 Neville Co., Pittsburgh  
 Reilly Tar & Chem. Corp., Merchants Bk. Bldg.,  
 Indianapolis See page 56.  
 White Tar Co., Kearny, N. J. See page 41.

**NAPHTHALENE SULFONATES**

E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 General Dyestuffs Corp., 230-5th Ave., N.Y.  
 National Aniline & Chem. Co., 40 Rector St.,  
 N.Y.

**NEROLI OIL (Artificial) see METHYL ANTHRANILATE)**

**NICOTINE COMPOUNDS**

Hood River Spray Co., Hood River, Ore.  
 Sanocide Spray Co., Fennville, Mich.  
 Tobacco By-Products & Chem. Corp.,  
 Columbia Bldg., Louisville, Ky.

**NOVELTY SOAPS**

Diamond Soap Co.,  
 1 Lowden St., Elizabeth, N. J.  
 Lightfoot Schultz Co., 1412 Park Ave.,  
 Hoboken, N. J.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**ODORLESS KEROSENE (see Petroleum Base, Deodorized)****OIL MILL EQUIPMENT**

V. D. Anderson Co., 1935 W. 96th St., Cleveland  
 Buckeye Iron & Brass Works, Dayton, O.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23  
 French Oil Mill Mach. Co., Piqua, O.  
 William Garrigue Co., 9 S. Clinton St., Chicago  
 Robinson, Butler, Hemingway & Co.,  
 Box 371, Bound Brook, N. J.  
 Ernest Scott & Co., Fall River, Mass.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.  
 Struthers-Wells Co., Warren, Pa.  
 Wurster & Sanger, Inc.,  
 5201 Kenwood Ave., Chicago

**OIL HYDROGENATION PLANTS**

William Garrigue Co., 9 S. Clinton St., Chicago  
 Robinson, Butler, Hemingway & Co.,  
 Box 371, Bound Brook, N. J.  
 Wurster & Sanger, Inc.,  
 5201 Kenwood Ave., Chicago

**OIL SOAP**

Antiseptol Liquid Soap Co.,  
 5424 N. W. Highway, Chicago  
**Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.  
 Baums Castorine Co., 200 Mathew St.,  
 Rome, N.Y.  
 Cincinnati Soap Co., Cincinnati  
**Clifton Chemical Co., 247 Front St., N.Y.**  
 See page 21.  
 Creco Co., Inc., Creco Bldg., L.I.C., N.Y.  
**Davies Young Soap Co., Dayton, O.**  
 See page 25.  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
**James Good, Inc., Kensington, Phila.**  
 See page 34.  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Harris Soap Co., Buffalo, N.Y.  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Jansen Soap & Chemical Co.,  
 324 Leavenworth St., San Francisco, Cal.  
 Kranich Soap Co., 54 Richards St., Brooklyn  
 Marshall Products, Inc., 806 N. 1st St., St. Louis  
**New York Soap Corp., 294 Pearl St., N.Y.**  
 See page 45.

North Coast Chem. & Soap Works,  
 Seattle, Wash.  
 Oil-Kraft, Inc., 3330 Beekman St., Cincinnati  
 Palmer Products, Inc., Waukesha, Wis.  
 Paper Makers Chemical Corp.,  
 Kalamazoo, Mich.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Selig Co., 336 Marietta St., Atlanta, Ga.  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago

**OLEIC ACID (see RED OIL)****OLIVE OIL (Commercial)***(see also Brokers and Dealers)*

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 Irving R. Boody & Co., 99 Wall St., N.Y.  
 W. R. Grace & Co., 7 Hanover Sq., N.Y.  
 Otto A. C. Hagen Co., Ledger Bldg., Phila.  
**Leghorn Trading Co., 155 E. 44th St., N.Y.**  
 See page 42.  
 Francisco Martin, 80 Wall St., N.Y.  
**Raclin, Snow & Cleaver, Inc., 15 William St.,  
 N.Y.** See page 55.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 E. M. Sergeant Pulp & Chemical Co.,  
 350 Fifth Ave., N.Y.  
**Smith-Weihman Co., 15 Moore St., N.Y.**  
 See page 59.  
**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**  
 See inside back cover.  
 Woburn Degreasing Co., 1200 Harrison Ave.,  
 Harrison, N. J.

**OLIVE OIL FOOTS***(see also Brokers and Dealers)*

John B. Dewsnap & Co., Pierce Ave.,  
 Long Island City, N.Y.  
 Otto A. C. Hagen Co., Ledger Bldg., Phila.  
**Leghorn Trading Co., 155 E. 44th St., N.Y.**  
 See page 42.  
**Raclin, Snow & Cleaver, 15 William St., N.Y.**  
 See page 55.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 E. M. Sergeant Pulp & Chemical Co.,  
 350 Fifth Ave., N.Y.  
**Smith-Weihman Co., 15 Moore St., N.Y.**  
 See page 59.  
**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**  
 See inside back cover.  
 Woburn Degreasing Co., 1200 Harrison Ave.,  
 Harrison, N. J.

**OLIVE OIL SOAPS**

**Armour Soap Wks., 1355 W. 31st St., Chicago**  
 See page 14.  
 Cincinnati Soap Co., Cincinnati  
**Davies Young Soap Co., Dayton, Ohio**  
 See page 25.  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.

**OLIVE OIL SOAPS (Cont'd)**

Hewitt Soap Co., Dayton, Ohio  
 Hockwald Chemical Co., 30 Bluxome St.,  
 San Francisco  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Levant Castile Soap Co., 327—36th St.,  
 Brooklyn, N.Y.  
 Los Angeles Soap Co., Los Angeles  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Procter & Gamble Co., Cincinnati, O.  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Swift & Co., Union Stock Yards, Chicago  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Allen B. Wisley Co., 6801 W. 65th St., Chicago

**ORANGE OIL (See ESSENTIAL OILS)****ORTHODICHLORBENZENE**

Dow Chemical Co., Midland, Mich. See page 27.  
 E. I. Du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 Hooker Electrochemical Co.,  
 60 E. 42nd St., N.Y. See page 36.  
 Monsanto Chemical Works, 1724 S. 2nd St.,  
 St. Louis  
 Niagara Alkali Co., 15 E. 41st St., N.Y.  
 See page 46.  
 Solvay Sales Corp., 61 Broadway, N.Y.  
 See pages 60, 61.

**OXALIC ACID***(see also Dealers)*

Amer. Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 Grasselli Chemical Co., 1800 Guardian Bldg.,  
 Cleveland See page 35.  
 Innis, Speiden & Company,  
 117 Liberty St., N.Y. See page 40.  
 Mallinckrodt Chemical Wks., St. Louis, Mo.  
 Merck & Co., Rahway, N. J.  
 E. M. Sergeant Pulp & Chemical Co.,  
 350 Fifth Ave., N.Y.  
 Truempy, Faesy & Besthoff, Inc.,  
 22 E. 40th St., N.Y.  
 Joseph Turner & Co., 500—5th Ave., N.Y.  
 Victor Chemical Works,  
 141 W. Jackson Blvd., Chicago

**PACKAGING MACHINERY (see CARTON-  
ING MACHY., FILLING MACHY.,  
WEIGHING EQUIP., WRAPPING  
MACHY.)****PAILS (Fibre) (see BARRELS, FIBRE)****PAILS (Steel)**

Central Can Co., 2415 W. 19th St., Chicago  
 Fein's Tin Can Co., 284 Furman St., Bklyn.  
 Geuder, Paeschke & Frey Co., Milwaukee

Niles Steel Prods. Co., 465 Walnut St.,  
 Niles, Ohio  
 Ohio Pail Co., Middlefield, Ohio  
 Pittsburgh Can Co., Pittsburgh, Pa.  
 Pressed Steel Tank Co., 5717 Greenfield Ave.,  
 Milwaukee, Wisc.  
 John Trageser Steam Copper Works,  
 Grand Ave., Maspeth, L. I., N.Y.  
 Vulcan Stamping & Mfg. Co., 4036 W. Lake St.,  
 Chicago  
 Wheeling Corrugating Co., Wheeling, W. Va.  
 Wilson & Bennett Mfg. Co., 6532 Menard St.,  
 Chicago

**PAILS (Wooden)**

Beaver Mills, Keene, N. H.  
 Eagle Woodware Mfg. Co., Hamilton, O.  
 Gambirinus Cooperage Works, 930 Mason St.,  
 Louisville, Ky.  
 Impervious Package Co., Keene, N. H.  
 Menasha Woodware Co., Menasha, Wis.  
 Richmond Cedar Works, Richmond, Va.

**PALM KERNEL OIL***(see also Brokers and Dealers)*

Irving R. Boody & Co., 99 Wall St., N.Y.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 Otto A. C. Hagen Co., 929 Ledger Bldg.,  
 Phila.  
 Spencer Kellogg & Sons, Buffalo, N.Y.  
 W. & A. Leaman, 17 State St., N.Y.  
 Raclin, Snow & Cleaver, 15 William St., N.Y.  
 See page 35.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 C. F. Simonin's Sons, Tioga & Belgrade Sts.,  
 Philadelphia  
 Smith-Weihman Co., 15 Moore St., N.Y.  
 See page 59.  
 United Africa Co., 67 Wall St., N.Y.  
 Wilbur-Ellis Co., 17 Battery Pl., N.Y.  
 See inside back cover.

**PALM OIL***(see also Brokers and Dealers)*

Irving R. Boody & Co., 99 Wall St., N.Y.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 Otto A. C. Hagen Co., 929 Ledger Bldg.,  
 Phila.  
 W. & A. Leaman, 17 State St., N.Y.  
 Leghorn Trading Co., 155 E. 44th St., N.Y.  
 See page 42.  
 Raclin, Snow & Cleaver, 15 William St., N.Y.  
 See page 55.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 Smith-Weihman Co., 15 Moore St., N.Y.  
 See page 59.  
 Stein, Hall & Co., 285 Madison Ave.,  
 N.Y. (Sumatra)  
 United Africa Co., 67 Wall St., N.Y.  
 Wilbur-Ellis Co., 17 Battery Pl., N.Y.  
 See inside back cover.  
 Woburn Degreasing Co., 1200 Harrison Ave.,  
 Harrison, N. J.

**PAPER CANS (see CANS)**

**PAPER (Corrugated)**

Consolidated Paper Co., Monroe, Mich.  
 Container Corp. of America,  
 111 W. Washington St., Chicago  
 Robert Gair Co., 155 E. 44th St., N.Y.  
 Hinde & Dauch Paper Co., Sandusky, O.  
 F. J. Kress Box Co., 29-30 Liberty Ave.,  
 Pittsburgh

**PAPER CUPS**

F. N. Burt Co., Batavia, N.Y.  
 Individual Drinking Cup Co., Easton, Pa.  
 Vortex Mfg. Co., 430 N. Western Ave., Chicago

**PAPER (Fancy Wrapping)**

Aluminum Co. of America, Gulf Bldg.,  
 Pittsburgh  
 Beekman Paper & Card Co.,  
 137 Varick St., N.Y.  
 A. M. Collins Mfg. Co., 1518 Walnut St., Phila.  
 Louis Dejonge & Co., 69 Duane St., N.Y.  
 DuPont Cellophane Co., 350—5th Ave., N.Y.  
 C. J. Fox Co., 236 Abbron St., Providence, R. I.  
 Fox Paper Co., Lockland, Cincinnati, O.  
 Hampden Glazed Paper & Card Co.,  
 Holyoke, Mass.  
 Henderson Lithographing Co., Cincinnati  
 Keller-Dorian Paper Co., 110 Fifth Ave., N.Y.  
 Kramer & Lange, 32 West 24th St., N.Y.  
 New England Card & Paper Co.,  
 10 Hanover St., Springfield, Mass.  
 Pictorial Package Co., Aurora, Ill.  
 Marquette Lithograph Co.,  
 730 N. Franklin St., Chicago  
 Nashua Gummed & Coated Paper Co.,  
 Nashua, N. H.  
 Potomac Lithograph Mfg. Co.,  
 Washington, D. C.  
 Richardson Co., Lockland, O.  
 Geo. Schmitt & Co., Grand & Florence Sts.,  
 Brooklyn  
 Louis Schulman Co., 465 Broome St., N.Y.  
 Sylvania Industrial Corp., Chanin Bldg., N.Y.  
 Tamm & Co., 66 Duane St., N.Y.  
 Transcello Paper Co., Milwaukee, Wis.  
 U. S. Printing & Lithographing Co.,  
 Cincinnati, O.  
 Walther & Co., Inc., 114 Harrison St., Bklyn.  
 Whiting-Paterson Co., Inc., 320—13th St.,  
 Philadelphia  
 Chas. W. Williams & Co., Inc.,  
 303 Lafayette St., N.Y.

**PAPER TOWELS**

Brown Co., Portland, Me.  
 Hoberg Paper & Fibre Co., Green Bay, Wisc.  
 Scott Paper Co., Chester, Pa.  
 Straubel Paper Co., Green Bay, Wis.  
 U. S. Envelope Co., Lititz, Pa.

**PARA BLOCKS (see DEODORIZING  
BLOCKS)****PARADICHLORBENZENE**

Dow Chemical Co., Midland, Mich. See page 27.  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.

**Hooker Electrochemical Co.,**

60 E. 42nd St., N.Y. See page 36.  
 Monsanto Chemical Works, 1724 S. 2nd St.,  
 St. Louis  
 Niagara Alkali Co., 15 E. 41st St., N.Y. See page 46.  
 Solvay Sales Corp., 61 Broadway, N.Y. See pages 60, 61.

**PARAFFIN**

Borne-Scrymser Co., 17 Battery Pl., N.Y.  
 E. A. Bromund Co., 258 Broadway, N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
 Gulf Refining Co., Frick Annex, Pittsburgh  
 Innis, Speiden & Co., 117 Liberty St., N.Y. See page 40.  
 Sherwood Petroleum Co., Bush Terminal  
 Bldg. No. 1, Bklyn.  
 Sinclair Refining Co., 45 Nassau St., N.Y.  
 Smith & Nichols, 121 Maiden Lane, N.Y.  
 Standard Oil Co., (N.J.) 26 Broadway, N.Y.  
 Strohmeyer & Arpe Co.,  
 139 Franklin St., N.Y.  
 Texas Co., 135 E. 42nd St., N.Y.

**PARAFFIN OILS**

Deep Rock Oil Corp., 155 N. Clark St., Chicago  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
 Gulf Refining Co., Pittsburgh  
 S. Schwabacher & Co., 59 Pearl St., N.Y.  
 Sherwood Petroleum Co., Bush Terminal Bldg.  
 No. 1, Brooklyn, N.Y.  
 Sinclair Refining Co., 45 Nassau St., N.Y.  
 Shell Petroleum Corp., Shell Bldg., St. Louis  
 Skelly Oil Co., 2534 Madison Ave.,  
 Kansas City, Mo.  
 L. Sonneborn Sons, Inc., 88 Lexington Ave.,  
 N.Y. See page 62.

**PARAFORMALDEHYDE**

E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 Heyden Chemical Co., 50 Union Sq., N.Y.  
 Mallinckrodt Chem. Wks.,  
 2nd & Mallinckrodt Sts., St. Louis, Mo.  
 Merck & Co., Rahway, N. J.  
 Sherka Chemical Co., 86 Orange St.,  
 Bloomfield, N. J.

**PARIS GREEN**

Chipman Chemical Engineering Co.,  
 Bound Brook, N. J.  
 Dow Chemical Co., Midland, Mich. See page 27.  
 Fred L. Lavanburg Co., 90 John St., N.Y.  
 Sherwin-Williams Co., Cleveland

**PASTES (see ADHESIVES)****PATCHOULI OIL (see ESSENTIAL OILS)****PEACH KERNEL OIL (see ESSENTIAL**



**PEANUT OIL***(see also Brokers and Dealers)*

Aspegren & Co., Produce Exchange, N.Y.  
 Balfour, Guthrie & Co., 67 Wall St., N.Y.  
 Irving R. Boody Co., 132 Front St., N.Y.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 Otto A. C. Hagen Co., 929 Ledger Bldg.,  
 Phila.  
 Spencer Kellogg & Sons, Buffalo, N.Y.  
 Mitsui & Co., 350—5th Ave., N.Y.  
 Raclin, Snow & Cleaver, 15 William St., N.Y.  
 See page 55.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 Southern Cotton Oil Co.,  
 Produce Exchange, N.Y.  
 Wecoline Prods. Co., 15 E. 26th St., N.Y.  
 Wilbur-Ellis Co., 17 Battery Pl., N.Y.  
 See inside back cover.

Neuman-Buslee & Wolfe, 224 W. Huron St.,  
 Chicago  
 Pfaltz & Bauer, 300 Pearl St., N.Y.  
 Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.  
 Riviera Products Co., 215 W. Ohio St.,  
 Chicago, Ill.  
 H. C. Ryland, Inc., 161 Water St., N.Y.  
 Edwin Seebach Co., 912 Broadway, N.Y.  
 C. A. Seguin Co., 500 N. Dearborn St., Chicago  
 Wm. G. Sibbach & Co., 201 S. 2nd Ave.,  
 Maywood, Ill.  
 Geo. Silver Import Co., 461—4th Ave., N.Y.  
 Ungerer & Co., 13 W. 20th St., N.Y.  
 See page facing front cover, 65.  
 United Laboratories, 8 E. 12th St., N.Y.  
 Van Dyk & Co., 57 Wilkinson Ave.,  
 Jersey City, N. J.  
 Albert Verley, Inc., 11 E. Austin Ave., Chicago

**PEARL ASH (see POTASSIUM CARBONATE)****PENNYROYAL OIL (see ESSENTIAL OILS)****PEPPERMINT OIL (see ESSENTIAL OILS)****PERCOLATORS (for Pyrethrum)**

Brighton Copper Works, 2163 Western Ave.,  
 Cincinnati  
 Arthur Colton Co., Detroit, Mich.  
 Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 Farlinger Rice Co., 56 N. 19th St.,  
 East Orange, N. J.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used)  
 See page 44.  
 Pfaudler Co., 89 East Ave., Rochester, N.Y.  
 Ernest Scott & Co., Fall River, Mass.  
 F. J. Stokes Machine Co., Philadelphia

**PERFUMING COMPOUNDS**

van Ameringen-Haebler, Inc.,  
 315—4th Ave., N.Y. See pages 12, 13.  
 Budd Aromatic Chemical Co.,  
 667 Washington St., N.Y.  
 Ph. Chaley, Inc., 200 Varick St., N.Y.  
 Antoine Chiris Co., 147 Waverly Pl., N.Y.  
 Compagnie Parento, Croton, N.Y.  
 Dodge & Olcott Co., 180 Varick St., N.Y.  
 P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
 E. I. du Pont de Nemours & Co.,  
 Wilmington, Del. See page 4.  
 Evergreen Chemical Co., 160—5th Ave., N.Y.  
 Felton Chemical Co., 603 Johnson Ave.,  
 Brooklyn See page 30.  
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
 Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.  
 See inside front cover, 33.  
 Heine & Co., 54 Cliff St., N.Y.  
 Industrial Organics, 131 E. 45th St., N.Y.  
 Lanvoix Chem. Co., 549 W. Randolph St., Chgo.  
 Geo. Lueders & Co., 427 Washington St., N.Y.  
 Magnus, Mabree & Reynard, 32 Cliff St., N.Y.  
 A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.

**PETIT GRAIN OIL (see ESSENTIAL OILS)****PETROLATUM (Petroleum Jelly)**

Borne-Scrymser & Co., 17 Battery Pl., N.Y.  
 Cheseborough Mfg. Co., 17 State St., N.Y.  
 Malone Oil Co., 2199 E. 18th St., Cleveland  
 Pennsylvania Refining Co., Karns City, Pa.  
 S. Schwabacher & Co., 59 Pearl St., N.Y.  
 (Liquid)  
 Shell Petroleum Corp., Shell Bldg., St. Louis  
 Sherwood Petroleum Co., Bush Terminal Bldg.,  
 No. 1, Brooklyn, N.Y.  
 Sinclair Refining Co., 45 Nassau St., N.Y.  
 L. Sonneborn Sons, 88 Lexington Ave., N.Y.  
 See page 62.  
 Standard Oil Co., (N.J.), 26 Broadway, N.Y.

**PETROLEUM BASE, Deodorized**

Atlantic Refining Co., 260 S. Broad St., Phila.  
 Sherwood Petroleum Co., Bush Terminal Bldg.,  
 No. 1, Brooklyn, N.Y.  
 L. Sonneborn Sons, 88 Lexington Ave., N.Y.  
 See page 62.  
 Standard Oil Co. of Ind., 910 S. Michigan Ave.,  
 Chicago

**PETROLEUM BASES (For Agricultural Sprays, Horticultural Sprays, Cattle Sprays, Insecticides, Polishes, etc.)**

American Mineral Spirits Co., 330 S. Mich.,  
 Chicago  
 Anderson-Prichard Oil Corp., Oklahoma City,  
 Oklahoma  
 Atlantic Refining Co., 260 S. Broad St., Phila.  
 Beacon Oil Co., Everett, Mass.  
 Deep Rock Oil Corp., 155 N. Clark St., Chicago  
 Empire Oil Co., Oil City, Pa.  
 Gulf Refining Co., Frick Annex, Pittsburgh  
 Indian Refining Co., Lawrenceville, Ind.  
 Oil Service Co., Warren, Pa.  
 Pennsylvania Ref. Co., Karns City, Pa.  
 Pennzoil Co., Oil City, Pa.  
 Refiners Petroleum Co., 122 S. Mich. Blvd.,  
 Chicago  
 Shell Petroleum Corp., Shell Bldg., St. Louis  
 Sherwood Petroleum Co., Bush Terminal Bldg.,  
 No. 1, Brooklyn  
 Sinclair Refining Co., 45 Nassau St., N.Y.  
 Skelly Oil Co., 2534 Madison Ave.,  
 Kansas City, Mo.



**PETROLEUM BASES (Cont'd)**

L. Sonneborn Sons, 88 Lexington Ave., N.Y.  
See page 62.  
Standard Oil Co., (Ind.) 910 S. Michigan Ave.,  
Chicago  
Standard Oil Co., (N.J.) 26 Broadway, N.Y.  
Sun Oil Co., 1608 Walnut St., Philadelphia  
Texas Co., 135 E. 42nd St., N.Y.  
Tidewater Oil Co., 11 Broadway, N.Y.

**PHENOL (Carbolic Acid)**

Barrett Company, 40 Rector St., N.Y.  
See page 18.  
Dow Chemical Co., Midland, Mich. See page 27.  
Heyden Chemical Corp., 50 Union Sq., N.Y.  
Innis Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
William E. Jordan & Bro.,  
2590 Atlantic Ave., Bklyn.  
Koppers Prods. Co., Koppers Bldg., Pittsburgh  
See page 41.  
Merck & Co., Rahway, N. J.  
Monsanto Chemical Works, 1724 S. 2nd St.,  
St. Louis, Mo.

**PHENYL ACETIC ALDEHYDE (see  
AROMATIC CHEMICALS)****PHENYL ETHYL ALCOHOL (see  
AROMATIC CHEMICALS)****PHOSPHOROUS PASTE**

John Opitz, Inc., 50-14-39th St.,  
Long Island City, N.Y.  
Sennewald Drug Co., 8th & Hickory Sts.,  
St. Louis

**PINE OIL**

American Turp. & Tar Co.,  
810 S. Broad St., New Orleans  
General Naval Stores Co., 230 Park Ave., N.Y.  
Gulf Naval Stores Supply Co.,  
Whitney Bldg., New Orleans  
Hercules Powder Co., Wilmington, Del.  
National Turp. Prods. Co., Gulf Point, Fla.  
Taylor, Lowenstein & Co., Mobile, Ala.

**PINE OIL DISINFECTANTS (see  
DISINFECTANTS, PINE OIL)****PINE NEEDLE OIL (see ESSENTIAL OILS)****PINE SCRUB SOAPS (see SCRUBBING  
SOAPS)****PIPE COILS**

Alloy Prods. Corp., 221 Madison St.,  
Waukesha, Wisc.  
Brighton Copper Works,  
2163 Western Ave., Cinn.  
Harrisburg Pipe & Bending Co.,  
Harrisburg, Pa.

Hartford Tube Products Co., Hartford, Conn.  
Houchin Machy. Co., Hawthorne, N. J.  
See page 37.  
Huber Machine Co., 259-46th St., Brooklyn  
See page 38.  
National Pipe Bending Co., New Haven, Conn.  
Philadelphia Pipe Bending Co., 4100 N. 5th St.,  
Philadelphia  
Pittsburgh Pipe Coil & Bending Co.,  
61 Bridge St., Etna, Pa.  
Rempe Co., 340 N. Sacramento Blvd., Chicago  
Whitlock Coil Pipe Co., Hartford, Conn.

**PLANT SPRAY BASE (See PETROLEUM  
PRODUCTS)****PLASTIC PRODUCTS**

Bakelite Corp., Bound Brook, N.J.  
General Electric Co., West Lynn, Mass.  
General Plastics, Inc., North Tonawanda, N.Y.  
Goodyear Tire & Rubber Co., Akron, O.  
Resinox Corp., Terre Haute, Ind.  
Toledo Synthetic Prods., Toledo, O.

**PLODDERS**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Houchin Machinery Co., Hawthorne, N. J.  
See page 37.  
Huber Machine Co., 265-46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 W. Broadway, N.Y.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used) See page 44.  
Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.

**POISONED SEEDS**

Sennewald Drug Co., Hickory & 8th St.,  
St. Louis  
Solicide Laboratories, Montclair, N.J.  
W. R. Sweeney, Salisbury, Mo.

**POLISH BASES (See PETROLEUM BASES)****POLISH, AUTO**

Armiger Chem. Co., 2155 W. Austin Ave.,  
Chicago  
Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.  
Champion Mfg. Co., 322 S. Erie St.,  
Indianapolis, Ind.  
Chemical Supply Co., 2450 Canal Rd., Cleveland  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
James Good, Inc., Kensington, Phila.  
See page 34.  
Harley Soap Co., 2832 E. Pacific St., Phila.  
Hull Co., 305 Washington St., Brooklyn  
Hysan Prods. Co., 2560 Armitage Ave., Chicago

**POLISH, AUTO (Cont'd)**

International Metal Polish Co.,  
Twill St. & Belt. R.R., Indianapolis  
Marshall Prods., Inc., 806 N. 1st St., St. Louis  
National Oil Prods. Co., Harrison, N.J.  
Palmer Products, Inc., Waukesha, Wis.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Shores Co., Cedar Rapids, Ia.  
Solshine Mfg. Co., 17 Caldwell St., Boston  
H. F. Staples Co., Medford, Mass.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
John T. Stanley Co., 640 W. 30th St., N.Y.

**POLISH, FLOOR**

Algoma Mfg. Co., Green Bay, Wis.  
Armiger Chem. Co., 2155 W. Austin Ave.,  
Chicago  
Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.  
Chemical Supply Co., 2450 Canal Rd., Cleveland  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.

Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.

Davies Young Soap Co., Dayton, O.

See page 25.

Eagle Soap Corp., Huntington, Ind.

See page 28.

Federal Varnish Co., 333 S. Peoria St.,  
Chicago

See page 29.

Fuld Bros., 2308 Frederick Ave., Baltimore

See page 31.

James Good, Inc., Kensington, Phila.

See page 34.

Harley Soap Co., 2832 E. Pacific St., Phila.  
Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco

Hull Co., 305 Washington St., Brooklyn

Hysan Prods. Co., 2560 Armitage Ave., Chicago

International Metal Polish Co., Indianapolis

Marshall Prods., Inc., 806 N. 1st St., St. Louis

Pacific Chem. Co., 1241 N. Main St.,  
Los Angeles

Palmer Products, Inc., Waukesha, Wis.

Peck's Prods. Co., 522-40 N. 2nd St., St. Louis

Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago

Selig Co., 336 Marietta St., Atlanta, Ga.

Solshine Mfg. Co., 17 Caldwell St., Boston

H. F. Staples Co., Medford, Mass.

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

Windsor Wax Co., 50 Church St., N.Y.

**POLISH, FURNITURE**

Algoma Mfg. Co., Green Bay, Wis.  
Armiger Chem. Co., 2155 W. Austin Ave.,  
Chicago

Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.

Chemical Supply Co., 2450 Canal Rd., Cleveland

Clifton Chemical Co., 247 Front St., N.Y.

See page 21.

Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.

Crystal Labs., 21 W. Park Way, N.S.,  
Pittsburgh

Eagle Soap Corp., Huntington, Ind.

See page 28.

Fuld Bros., 2308 Frederick Ave., Baltimore

See page 31.

James Good, Inc., Kensington, Phila.

See page 34.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco

Hysan Prods. Co., 2560 Armitage Ave., Chicago

International Metal Polish Co.,  
Twill St. & Belt. R.R., Indianapolis

Jansen Soap & Chemical Co.,  
324 Leavenworth St., San Francisco, Cal.

National Oil Products Co., Harrison, N. J.

North Coast Soap & Chem. Wks.,  
Seattle, Wash.

Palmer Products, Inc., Waukesha, Wis.

Peck's Prods. Co., 522-40 N. 2nd St., St. Louis

Perrow Chem. Co., Hurt, Va.

Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago

Sanitary Mfg. Co., 926 Ft. Wayne Ave.,  
Indianapolis

Shores Co., Cedar Rapids, Ia.

Solshine Mfg. Co., 17 Caldwell St., Boston

H. F. Staples Co., Medford, Mass.

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

Windsor Wax Co., 50 Church St., N.Y.

**POLISH, METAL**

Armiger Chem. Co., Inc., 2155 W. Austin Ave.,  
Chicago, Ill.

Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.

W. D. Carpenter Co., Syracuse, N.Y.

Chemical Supply Co., 2450 Canal Rd., Cleveland

Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.

Fuld Bros., 2308 Frederick Ave., Baltimore

See page 31.

James Good, Inc., Kensington, Phila.

See page 34.

Harley Soap Co., 2832 E. Pacific St., Phila.

Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco

Hull Co., 305 Washington St., Brooklyn

Hysan Prods. Co., 2560 Armitage Ave., Chicago

International Metal Polish Co.,  
Twill St. & Belt. R.R., Indianapolis

New York Soap Corp., 294 Pearl St., N.Y.

See page 45.

Oil-Kraft, Inc., 3330 Beekman St., Cincinnati

Pacific Chem. Co., 1421 N. Main St.,  
Los Angeles

Palmer Products, Inc., Waukesha, Wis.

Peck's Prods. Co., 522-40 N. 2nd St., St. Louis

Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago

Rochester Germicide Co., 16 Dowling Pl.,  
Rochester, N.Y.

Selig Co., 336 Marietta St., Atlanta, Ga.

Shores Co., Cedar Rapids, Ia.

Solshine Mfg. Co., 17 Caldwell St., Boston

John Sunshine Chem. Co., 604 W. Lake St.,  
Chicago

Trojan Prods. & Mfg. Co., 3101 S. Wabash Ave.,  
Chicago

Uncle Sam Chem. Co., 359 Cherry St., N.Y.

U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

**POLISH, WAX**

- Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.
- Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.
- Davies-Young Soap Co., Dayton, O.  
See page 25.
- Eagle Soap Corp., Huntington, Ind.  
See page 28.
- Federal Varnish Co., 333 S. Peoria St., Chicago  
See page 29.
- Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.
- James Good, Inc., Kensington, Phila.  
See page 34.
- Hockwald Chemical Co., 30 Bluxome St.,  
San Francisco
- Hull Co., 305 Washington St., Brooklyn
- Hysan Prods. Co., 2560 Armitage Ave., Chicago
- International Metal Polish Co.,  
Twill St. & Belt, R.R., Indianapolis
- Marshall Products, Inc., 806 N. 1st St., St. Louis
- Palmer Products, Inc., Waukesha, Wis.
- Peck's Prods. Co., 5224 N. 2nd St., St. Louis
- Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago
- Rochester Germicide Co., 16 Dowling Pl.,  
Rochester, N.Y.
- Selig Co., 336 Marietta St., Atlanta, Ga.
- John T. Stanley Co., 640 W. 30th St., N.Y.
- H. F. Staples Co., Medford, Mass.
- Uncle Sam Chem. Co., 359 Cherry St., N.Y.
- U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago
- Windsor Wax Co., Inc., 50 Church St., N.Y.

**POWDER GUNS (see BELLOWS)****POWDERED SOAP (see SOAP, POWDERED)**  
Do not confuse with SOAP POWDERS**PRESSES (Automatic Soap)**

- Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.
- Houchin Machinery Co., Hawthorne, N. J.  
See page 37.
- R. A. Jones & Co., Cincinnati, O.
- J. M. Lehmann Co., 248 W. Broadway, N.Y.
- Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used) See page 44.
- Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.

**PRESSES (Foot and Hand Lever) (for Soap and Para Cakes)**

- Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.
- Houchin Machinery Co., Hawthorne, N. J.  
See page 37.
- Huber Machine Co., 259 46th St., Brooklyn  
See page 38.
- J. M. Lehmann Co., 248 W. Broadway, N.Y.
- Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used) See page 44.
- Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.
- F. J. Stokes Mach. Co., Philadelphia, Pa.

**POTASH (Caustic) (see CAUSTIC POTASH)****POTASSIUM CARBONATE**

- American Cyanamid & Chemicals Corp.,  
30 Rockefeller Plaza, N.Y.
- E. I. du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.
- Grasselli Chem. Co., 1300 Guardian Bldg.,  
Cleveland See page 35.
- Industrial Chem. Sales Co., 230 Park Ave., N.Y.
- Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.
- Jungmann & Co., 157 Chambers St., N.Y.
- Harshaw Chem. Co., Cleveland
- Niagara Alkali Co., 9 E. 41st St., N.Y.  
See page 46.
- E. M. Sergeant Pulp & Chemical Co.,  
350—5th Ave., N.Y.
- Truempy, Faesy & Besthoff,  
22 E. 40th St., N.Y.
- Jos. Turner & Co., 500—5th Ave., N.Y.

**POTASSIUM PERSULFATE**

- American Cyanamid & Chemicals Corp.,  
30 Rockefeller Plaza, N.Y.
- Buffalo Elec. Chem. Co.,  
River Rd. & Sawyer Ave., Buffalo
- E. I. du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.
- Jungmann & Co., 157 Chambers St., N.Y.
- Pfaltz & Bauer, 300 Pearl St., N.Y.
- Jos. Turner & Co., 500—5th Ave., N.Y.

**PRIVATE FORMULAS (see under individual products)****PUMICE STONE**

- Allied Industrial Prods. Co.,  
17 N. Elizabeth St., Chicago
- Chas. B. Chrystal Co., 11 Park Pl., N.Y.
- Goris & Arnstein, 3700 Racine Ave., Chicago
- K. F. Griffiths & Co., 110 E. 42nd St., N.Y.
- Hammill & Gillespie, 225 Broadway, N.Y.
- National Pumice Stone Co., foot of Halsey St.,  
Astoria, L. I.
- Jas. H. Rhodes & Co., 157 W. Austin Ave.,  
Chicago
- Tamms Silica Co., 228 N. La Salle St., Chicago
- Whittaker, Clark & Daniels, 245 Front St., N.Y.

**PUMP GUNS (for Insecticides) (see SPRAYERS, see BELLOWS)****PUMPS**

- Aldrich Pump Co., 1 Pine St., Allentown, Pa.
- Alsop Engineering Corp., 39 W. 60th St., N.Y.
- American Steam Pump Co.,  
Battle Creek, Mich.
- Beach-Russ Co., 50 Church St., N.Y.
- Blackmer Rotary Pump Co.,  
Grand Rapids, Mich.
- Buffalo Forge Co., 490 Broadway, Buffalo, N.Y.
- Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.

**PUMPS (Cont'd)**

M. T. Davidson Co., 154 Nassau St., N.Y.  
 Foster Pump Works, 54 Washington St.,  
 Brooklyn, N.Y.  
 Goulds Pumps, Inc., Seneca Falls, N.Y.  
**Houchin Machinery Co., Hawthorne, N. J.**  
 See page 37.  
**Huber Machine Co., 259-46th St., Brooklyn**  
 See page 38.  
 Ingersoll-Rand Co., 11 Broadway, N.Y.  
 Karl Kiefer Machine Co., Cincinnati  
 Lobee Pump & Machine Co., 129 Dearborn St.,  
 Buffalo, N.Y.  
 P. H. & F. M. Roots Co., Connerville, Ind.  
 T. Shriver & Co., Harrison, N.J.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.  
 F. J. Stokes Machine Co., Philadelphia, Pa.  
 Taber Pump Co., 278 Elm St., Buffalo, N.Y.  
 115 Broadway, N.Y.  
 Worthington Pump & Machinery Co.,  
 115 Broadway, N.Y.

**PYRETHRUM**

An-Fo Mfg. Co., 3129 Elmwood Ave.,  
 Oakland, Cal.  
**Wm. Benkert & Co., 100 Gold St., N.Y.**  
 See page 19.  
**Derris, Inc., 79 Wall St., N.Y.** See page 26.  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
**McCormick & Co., Baltimore, Md.**  
 See page 43.  
 McLaughlin, Gormley King Co., 1715-5th St.,  
 S. E., Minneapolis, Minn.  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Sherwood Petroleum Co., Bush Terminal Bldg.  
 No. 1, Brooklyn.  
 Allaire Woodward & Co., Peoria, Ill.

**PYRETHRUM EXTRACT**

An-Fo Mfg. Co., 3129 Elmwood Ave.,  
 Oakland, Cal.  
**Baird & McGuire, Inc., Holbrook, Mass.**  
 See pages 16, 17.  
**Wm. Benkert & Co., 100 Gold St., N.Y.**  
 See page 19.  
 Cino Chem. Prods. Co., 210 Main St., Cincinnati  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
**McCormick & Co., Baltimore** See page 43.  
 McLaughlin Gormley King Co.,  
 1715-5th St., S. E., Minneapolis  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Seacoast Labs., Inc., 156 Perry St., N.Y.  
 Sherwood Petroleum Corp., Bush Terminal  
 Bldg. No. 1, Brooklyn  
 Allaire Woodward & Co., Peoria, Ill.

**RAPESEED OIL**

Balfour, Guthrie & Co., 67 Wall St., N.Y.  
 Irving R. Boody & Co., 99 Wall St., N.Y.  
**Leghorn Trading Co., 155 E. 44th St., N.Y.**  
 See page 42.

Raclin, Snow & Cleaver, 15 William St., N.Y.  
 See page 55.  
**Smith-Weihman Co., 15 Moore St., N.Y.**  
 See page 59.

**RAT EXTERMINATING PRODUCTS**

Chemical Supply Co., 2450 Canal Rd., Cleveland  
**Eagle Soap Corp., Huntington, Ind.**  
 See page 28.  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
 Guarantee Exterminating Co.,  
 500-5th Ave., N.Y.  
 Hockwald Chemical Co., 30 Bluxome St.,  
 San Francisco  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago  
 John Opitz, Inc., Long Island City, N.Y.  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Ratin Laboratories, Inc., 112 Broad St., N.Y.  
 Sennewald Drug Co., 8th & Hickory Sts.,  
 St. Louis  
 Soilicide Laboratories, Upper Montclair, N. J.  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago

**RAT POISONS (see SQUILLS, THALLIUM SULFATE, etc.)****RED OIL (Oleic Acid)**(see also *Brokers and Dealers*)

Celina Stearic Acid Co., Celina, Ohio  
 Century Stearic Acid Candle Works,  
 22 E. 40th St., N.Y.  
**Darling & Co., 4201 S. Ashland Ave., Chicago**  
 Emery Industries, Inc., 4300 Carew Tower,  
 Cincinnati  
 A. Gross & Co., 122 E. 42nd St., N.Y.  
 W. C. Hardesty & Co., 41 E. 42nd St., N.Y.  
 Harkness & Coving, Ivorydale, Cincinnati  
 Theobald Animal By-Products Co.,  
 Kearny, N.J.  
 M. Werk Co., St. Bernard, Cincinnati  
 Wilson-Martin Co., Snyder Ave. &  
 Swanson St., Philadelphia

**REFINING EQUIPMENT (Glycerine)**

E. B. Badger Co., 25 Pitts St., Boston  
 Buffalo Foundry & Machine Co., Buffalo, N.Y.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 William Garrigue & Co., 9 S. Clinton St.,  
 Chicago  
 Lancaster Iron Works, 564 S. Prince St.,  
 Lancaster, Pa.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Ernest Scott & Co., Fall River, Mass.  
 Walter E. Simmons Co., Boston  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.  
 Struthers-Wells Co., Warren, Pa.  
 Swenson Evaporator Co., Harvey, Ill.  
 Wurster & Sanger, 5201 Kenwood St., Chicago  
 Zarembo Co., Buffalo, N.Y.

**REFRIGERATING EQUIPMENT**

York Ice Machine Co., York, Pa.

**REMELTERS**

Houchin Machinery Co., Hawthorne, N. J.  
See page 37.  
Huber Machine Co., 259—46th St., Brooklyn  
See page 38.  
Lancaster Iron Works, 564 S. Prince St.,  
Lancaster, Pa.  
Patterson Foundry & Mach. Co.,  
East Liverpool, O.  
Struthers-Wells Co., Warren, Pa.  
Wurster & Sanger, Inc., 5201 Kenwood Ave.,  
Chicago

**RHODINOL (see AROMATIC CHEMICALS)****ROACH POWDER (see HOUSEHOLD  
INSECTICIDE POWDER)****ROSE OIL (see ESSENTIAL OILS)****ROSEMARY OIL (see ESSENTIAL OILS)****ROSIN**

Antwerp Naval Stores Co., Savannah, Ga.  
General Naval Stores Co.,  
230 Park Ave., N.Y. (Wood)  
Georgia Rosin Prods. Co., Brunswick, Ga.  
Guignon & Green, 17 Battery Pl., N.Y.  
Hercules Powder Co.,  
Wilmington, Del. (Wood)  
Industrial Chem. Sales Co., Inc.,  
230 Park Ave., N.Y.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Taylor, Lowenstein & Co., Mobile, Ala.  
G. A. Wharry & Co., 24 State St., N.Y.

**ROTENONE (see DERRIS)****ROTTEN STONE**

Allied Industrial Prods. Co.,  
17 N. Elizabeth St., Chicago  
Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
K. F. Griffiths Co., 110 E. 42nd St., N.Y.  
Goris & Arstein, 3700 Racine Ave., Chicago  
Hammill & Gillespie, 225 Broadway, N.Y.  
National Pumice Stone Co., Inc.,  
Foot of Halsey St., Astoria, L. I.  
Jas. H. Rhodes & Co., 157 W. Austin Ave.,  
Chicago  
Tamms Silica Co., 229 N. La Salle St., Chicago  
Whittaker Clark & Daniels 245 Front St., N.Y.  
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

**RUBBER STOPPERS (see LABORATORY  
APPARATUS)****SAFROL (see AROMATIC CHEMICALS)****SAL SODA**

(see also Dealers)

American Cyanamid & Chemicals Corp.,  
30 Rocketteller Plaza, N.Y.  
Church & Dwight Co., 70 Pine St., N.Y.  
General Chem. Co., 40 Rector St., N.Y.  
See page 32.  
Grasselli Chemical Co., 1800 Guardian Bldg.,  
Cleveland  
See page 35.  
Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
Mathieson Alkali Works, 60 E. 42nd St., N.Y.  
Mechling Bros. Chemical Co., Camden, N.J.  
Michigan Alkali Co., 10 E. 40th St., N.Y.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Solvay Sales Corp., 61 Broadway, N.Y.  
See pages 60, 61.

**SALT (Common Salt)**

(see also Dealers)

Columbia Alkali Co., Empire State Bldg., N.Y.  
See page 22.  
Diamond Alkali Co., First Nat. Bk. Bldg.,  
Pittsburgh  
Dow Chemical Co., Midland, Mich. See page 27.  
Hooker Electrochemical Co.,  
60 E. 42nd St., N.Y. See page 36.  
International Salt Co., 475—5th Ave., N.Y.  
Jefferson Salt & Mining Co., Louisville, Ky.  
LeRoy Salt Co., LeRoy, N.Y.  
Myles Salt Co., 1007 Camp St.,  
New Orleans, La.  
Pomeroy Salt Co., Pomeroy, Ohio  
Remington Salt Co., Ithaca, N.Y.  
Saginaw Salt Prods. Co., Saginaw, Mich.  
Solvay Sales Corp., 61 Broadway, N.Y.  
See pages 60, 61.

**SAMPLE CASES**

Arrow Mfg. Co., 15th & Hudson Sts.,  
Hoboken, N. J.  
Knickerbocker Case Co., 2311 N. Crawford Ave.,  
Chicago

**SANDALWOOD OIL**

van Ameringen-Haebler, Inc.,  
315—4th Ave., N.Y. See pages 12, 13.  
W. J. Bush & Co., 11 E. 38th St., N.Y.  
Cox, Aspden & Fletcher, 39 Cortlandt St., N.Y.  
Dodge & Olcott Co., 180 Varick St., N.Y.  
P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.  
See inside front cover, 33.  
Imperial Export Co., 11 Moore St., N.Y.  
(Australian)  
Geo. Lueders & Co., 427 Washington St., N.Y.  
Magnus, Mabey & Reynard, 32 Cliff St., N.Y.  
Neumann-Buslee & Wolfe, 224 W. Huron St.,  
Chicago  
Orbis Products Trading Co.,  
215 Pearl St., N.Y.  
H. C. Ryland, Inc., 161 Water St., N.Y.  
Ungerer & Co., 13 W. 20th St., N.Y.  
See page facing inside front cover, 65.  
Albert Verley, Inc., 11 E. Austin Ave., Chicago



**SAPONIN (Ext. Soap Bark)**

Dodge & Olcott Co., 180 Varick St., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
 Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
 Hoffman-LaRoche Chem. Works,  
 49 Cliff St., N.Y.  
 Interstate Color Co., 5 Beekman St., N.Y.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Geo. Lueders & Co., 427 Washington St., N.Y.  
 Merck & Co., Rahway, N. J.  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
 Pfaltz & Bauer, 300 Pearl St., N.Y.  
 H. C. Ryland, Inc., 161 Water St., N.Y.  
 Ungerer & Co., 13 W. 20th St., N.Y.  
 See page facing inside front cover, 65.

**SASSAFRAS (Artificial) (see AROMATIC CHEMICALS)****SCIENTIFIC INSTRUMENTS (see INSTRUMENTS)****SCOURING POWDERS**

American Soap Powder Wks., Inc.,  
 98 Van Dyke St., Brooklyn  
 Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.  
 Baums Castorine Co., 200 Mathew St.,  
 Rome, N.Y.  
 Cincinnati Soap Co., Cincinnati  
 Cudahy Packing Co., Chicago  
 Du Bois Soap Co., Cincinnati, O.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chemical Co.,  
 324 Leavenworth St., San Francisco, Cal.  
 Los Angeles Soap Co., Los Angeles  
 National Milling & Chem. Co., Manayunk,  
 Phila.  
 Pacific Chem. Co., 1412 N. Main St.,  
 Los Angeles  
 Palmer Prods., Inc., Waukesha, Wisc.  
 Paper Makers Chemical Corp.,  
 Kalamazoo, Mich.  
 Peck's Prods. Co., 5224 N. 2nd St., St. Louis  
 Poland Soap Works, Anniston, Ala.  
 Procter & Gamble Co., Cincinnati  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Solvay Sales Corp., 61 Broadway, N.Y.  
 See pages 60, 61.  
 Stevens Soap Corp., 200 Sullivan St., Brooklyn  
 Swift & Co., Chicago  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SCOURING SOAPS (Bars)**

Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.  
 Hewitt Soap Co., Dayton, O.

Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Los Angeles Soap Co., Los Angeles  
 National Soap Co., P. O. Box 1613,  
 Tacoma, Wash.  
 Procter & Gamble, Cincinnati, O.  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SCREENS (Screening Equipment)**

C. O. Bartlett & Snow Co., 6200 Harvard Ave.,  
 Cleveland, O.  
 Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 B. F. Gump Co., 431 S. Clinton St., Chicago  
 J. H. Day Co., Cincinnati  
 J. M. Lehmann Co., 248 W. Broadway, N.Y.  
 Ludlow-Sawyer Wire Co., St. Louis, Mo.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used)  
 See page 44.

Sprout, Waldron & Co., Muncy, Pa.  
 Stedman's Fdy. & Machine Works,  
 Aurora, Ind.  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 (Used) See page 63.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sturtevant Mill Co., Boston, Mass.  
 W. S. Taylor Co., Cleveland, O.  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Wickwire Spencer Steel Co.,  
 41 E. 42nd St., N.Y.

**SCRUBBING MACHINES (see FLOOR MACHINES)****SCRUBBING SOAPS, LIQUID**

Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.  
 Baums Castorine Co., 200 Mathew St.,  
 Rome, N.Y.  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.  
 Creco Co., Inc., Creco Bldg.,  
 Long Island City, N.Y.  
 Davies-Young Soap Co., Dayton, Ohio  
 See page 25.  
 Eagle Soap Corp., Huntington, Ind.  
 See page 28.  
 Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.  
 James Good, Inc., Kensington, Phila.  
 See page 34.  
 Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chemical Co.,  
 324 Leavenworth St., San Francisco, Cal.  
 Kranich Soap Co. 54 Richards St., Brooklyn  
 Marshall Prods., Inc., 806 N. 1st St., St. Louis  
 New York Soap Corp., 294 Pearl St., N.Y.  
 See page 45.

North Coast Chem. & Soap Wks.,  
 Seattle, Wash.  
 Palmer Products, Inc., Waukesha, Wis.  
 Paper Makers Chemical Corp.,  
 Kalamazoo, Mich.



**SCRUBBING SOAPS, LIQUID (Cont'd)**

Peck's Prods. Co., 522-40 No. 2nd St., St. Louis  
 Procter & Gamble Co., Cincinnati, O.  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Sanitary Mfg. Co., 926 Ft. Wayne Ave.,  
 Indianapolis, Ind.  
 H. F. Staples Co., Medford, Mass.  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.

**SEALING MACHINERY (Bags)**

B. F. Gump Co., 431 S. Clinton St., Chicago  
 New Jersey Machine Corp., Hoboken, N.J.

**SEALING MACHINERY (Cartons)**

Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.

J. L. Ferguson Co., Joliet, Ill.  
 R. A. Jones & Co., Cincinnati, O.  
 New Jersey Machine Corp., Hoboken, N.J.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used) See page 44.

Pneumatic Scale Corp., Norfolk Downs, Mass.  
 See pages 48, 49.

F. B. Redington Co., 112 S. Sangamon St.,  
 Chicago  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 (Used) See page 63.  
 Stokes & Smith Co., Philadelphia, Pa.  
 See page 64.

Triangle Package Machinery Co.,  
 910 Spaulding Ave., Chicago

**SEALING MACHINERY (Cases)**

H. R. Bliss Co., Niagara Falls, N.Y.  
 Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.

J. L. Ferguson Co., Joliet, Ill.  
 McStay Machine Co., 3036 E. 5th St.,  
 Los Angeles  
 J. L. Morrison Co., Niagara Falls, N.Y.  
 Nashua Package Sealing Co., Nashua, N. H.  
 Newman Tallow & Soap Machy. Co.,  
 1051 W. 35th St., Chicago (Used) See page 44.

Standard Sealing Equipment Corp.,  
 Rawson St., Long Island City, N.Y.  
 Stein-Brill Corp., 183 Varick St., N.Y.  
 (Used) See page 63.

**SESQUICARBONATE OF SODA (for Bath Salts, etc.), (see SODIUM SESQUICARBONATE)****SHAMPOO BASE**

Antiseptol Liquid Soap Co.,  
 5424 N. W. Highway, Chicago  
 Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.

Cincinnati Soap Co., Cincinnati  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.

Columbia Soap & Chem. Co., Inc.,  
 324 Leavenworth St., San Francisco

James Counts Soap Co.,  
 2nd & Washington Aves., St. Louis  
 Creco Co., Inc., Creco Bldg., Long Island City,  
 N.Y.

Davies-Young Soap Co., Dayton, O.  
 See page 25.

Eagle Soap Corp., Huntington, Ind.  
 See page 28.

Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.

Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chem. Co., 324 Leavenworth St.,  
 San Francisco

Kranich Soap Co., 54 Richards St., Brooklyn  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Los Angeles Soap Co., Los Angeles  
 Marshall Prods., Inc., 806 N. 1st St. St. Louis  
 New York Soap Corp., 294 Pearl St., N.Y.  
 See page 45.

Palmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 John Powell & Co., 114 E. 32nd St., N.Y.  
 See pages 51, 52.

Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago

U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.

Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SHAMPOOS, LIQUID**

Antiseptol Liquid Soap Co.,  
 5424 N. W. Highway, Chicago  
 Armour Soap Wks., 1355 W. 31st St., Chicago  
 See page 14.

Baums Castorine Co., 200 Mathew St.,  
 Rome, N.Y.  
 Bobrick Mfg. Corp., 111 Garey St., Los Angeles  
 Cincinnati Soap Co., Cincinnati  
 Clifton Chemical Co., 247 Front St., N.Y.  
 See page 21.

James Counts Soap Co.,  
 2nd & Washington Aves., St. Louis  
 Creco Co., Inc., Creco Bldg., Long Island City,  
 N.Y.

Davies-Young Soap Co., Dayton, O.  
 See page 25.

Eagle Soap Corp., Huntington, Ind.  
 See page 28.

Fuld Bros., 2308 Frederick Ave., Baltimore  
 See page 31.

Harley Soap Co., 2832 E. Pacific St., Phila.  
 Hockwald Chem. Co., 30 Bluxome St.,  
 San Francisco

Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 Jansen Soap & Chem. Co., 324 Leavenworth St.,  
 San Francisco

Kranich Soap Co., 54 Richards St., Brooklyn  
 Lightfoot Schultz Co., 1412 Park Ave.,  
 Hoboken, N. J.

Los Angeles Soap Co., Los Angeles  
 Marshall Prods., Inc., 806 N. 1st St. St. Louis  
 New York Soap Corp., 294 Pearl St., N.Y.  
 See page 45.

North Coast Soap & Chem. Wks.,  
 Seattle, Wash.

**SHAMPOOS, LIQUID (Cont'd)**

Oil-Kraft, Inc., 3330 Beekman St., Cincinnati  
 Palmer Products, Inc., Waukesha, Wis.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Theo. B. Robertson Prods. Co.,  
 700 W. Division St., Chicago  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Shores Co., Cedar Rapids, Ia.  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Swift & Co., Union Stock Yards, Chicago  
 U. S. Sanitary Specialties Corp.,  
 435 S. Western Ave., Chicago  
 Vliet Soap Co., 638 Monroe St., Brooklyn  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago  
 Chas. W. Young & Co., Phila.

**SHAMPOOS, POWDER AND CAKE**

Cincinnati Soap Co., Cincinnati  
**Davies-Young Soap Co., Dayton, O.**  
 See page 25.  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Lightfoot Schultz Co., 1412 Park Ave.,  
 Hoboken, N. J.  
 North Coast Chem. & Soap Wks.,  
 Seattle, Wash.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Warren Soap Mfg. Co., 51 Waverly St.,  
 Cambridge, Mass.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SHAMPOOS, SOAPLESS**

**Fuld Bros., 2308 Frederick Ave., Baltimore**  
 See page 31.  
 Hysan Prods. Co., 2560 Armitage Ave., Chicago  
 National Oil Products Co., Harrison, N.J.  
 Richards Chemical Works, Jersey City, N.J.  
**L. Sonneborn Sons, Inc., 88 Lexington Ave.,**  
**N.Y.**  
 See page 62.

**SHAVING CREAM**

Cincinnati Soap Co., Cincinnati  
**Clifton Chemical Co., 247 Front St., N.Y.**  
 See page 21.  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Lightfoot Schultz Co., 1412 Park Ave.,  
 Hoboken, N. J.  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SHAVING CREAM BASE**

**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SHAVING SOAP, STICKS**

Cincinnati Soap Co.,  
 7th & Elm St., Cincinnati

Colgate-Palmolive-Peet Co., Jersey City, N.J.  
 J. Eavenson & Sons, Del & Penn. Sts.,  
 Camden, N. J.  
 Holman Soap Co., 3100 Fox St., Chicago, Ill.  
 Lightfoot Schultz Co., 1412 Park Ave.,  
 Hoboken, N. J.  
 Los Angeles Soap Co., Los Angeles  
 Geo. A. Schmidt Co., 236 W. North Ave.,  
 Chicago  
 John T. Stanley Co., 640 W. 30th St., N.Y.  
 Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SHIPPING CASES (see BOXES)****SHEEP DIPS (see CATTLE DIPS)****SHELLAC**

Barrett Varnish Co., 2242 Belmont Ave.,  
 Chicago  
 Berry Bros., 211 Leib St., Detroit, Mich.  
 Chas. Comerford Shellac Co., 509 Third Ave.,  
 Brooklyn, N.Y.  
 Gillespie-Rogers-Pyatt Co., 80 John St., N.Y.  
 A. R. Haeuser Co., 52 Warren St., Brooklyn  
 George H. Lincks, 123 Front St., N.Y.  
 Mac-Lac-Kasebier-Chatfield Corp., 80 Cliff St.,  
 N.Y.  
 A. G. Watt Co., 7016 Euclid Ave., Cleveland, O.  
 Wm. Zinsser & Co., 516 W. 59th St., N.Y.

**SIFTER TOP CANS (see CANS, Sifter Top)****SILICA**

American Colloid Co., 363 W. Superior St.,  
 Chicago  
 Central Silica Corp., Comer Bldg.,  
 Birmingham, Ala.  
 Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
 Goris & Arnstein, 3700 Racine Ave., Chicago  
 K. F. Griffiths & Co., 110 E. 42nd St., N.Y.  
 Hammill & Gillespie, 225 Broadway, N.Y.  
 Harshaw Chem. Co., Cleveland  
 Illinois Silica Co., Cairo, Ill.  
 Industrial Chem. Sales Co., Inc.,  
 230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 International Silica Co., Cairo, Ill.  
 N. J. Pulverizing Co., 15 Park Row, N.Y.  
 Pennsylvania Pulverizing Co., Lewistown, Pa.  
 R. F. Revson Co., 91-7th Ave., N.Y.  
 Jas. H. Rhodes & Co., 153 W. Austin Ave.,  
 Chicago  
 Silica Prods. Co., 700 Baltimore Ave.,  
 Kansas City, Mo.  
 Tamm's Silica Co., 228 N. La Salle St., Chicago  
 Wishnick-Tumpeper, Inc., 253 Front St., N.Y.

**SILICATE OF SODA (see SODIUM SILICATE)****SLABBERS**

Consolidated Prods. Co., 15 Park Row, N.Y.  
 (Used) See page 23.  
 Houchin Machinery Co., Hawthorne, N.J.  
 See page 37.

**SLABBERS (Cont'd)**

- Huber Mach. Co., 259—46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 West Broadway, N.Y.  
Newman Tallow & Soap Machinery Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Stein-Brill Corp., 183 Varick St., N.Y.  
See page 63.

**SOAP, CASTILE (see CASTILE SOAP)****SOAP, CHIP (see CHIP SOAP)****SOAP COLORS (see also Perfuming Compounds)**

- American Aniline Prod., Inc.,  
50 Union Sq., N.Y.  
Stanley Doggett, Inc., 75 Varick St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Dyestuffs & Chemicals, Inc.,  
11th & Monroe Sts., St. Louis  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
Geigy Co., 89 Barclay St., N.Y.  
General Dyestuffs Corp., 230—5th Ave., N.Y.  
Interstate Color Co., 5 Beekman St., N.Y.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Leeben Chem. Co., 389 Washington St., N.Y.  
National Aniline & Chem. Co.,  
40 Rector St., N.Y.  
Pylam Products Co., 799 Greenwich St., N.Y.  
See page 54.  
Sandoz Chem. Wks., 61 Van Dam St., N.Y.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y. (Export)

**SOAP DIES**

- Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Anthony J. Fries, 717 Sycamore St., Cincinnati  
Houchin Machinery Co., Hawthorne, N.J.  
See page 37.  
Huber Mach. Co., 259—46th St., Brooklyn  
See page 38.  
Jas. H. Matthews & Co., 480 Canal St., N.Y.  
Mooney & Bueter, 564 W. Randolph St.,  
Chicago  
I. Schwartz Engraving & Die Works,  
38 W. 21st St., N.Y.  
Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.

**SOAP DISPENSERS (Liquid)**

- Bobrick Chemical Corp., 111-117 Garey St.,  
Los Angeles  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Garnet Chem. Corp., 911 N. Lumber St.,  
Allentown, Pa.  
Imperial Brass Mfg. Co., 1200 W. Harrison St.,  
Chicago  
Monmouth Prods. Co., 221 E. 131st St.,  
Cleveland

- Moore Bros. Co., 154 Chambers St., N.Y.  
Chas. Morrill, Inc., 100 Lafayette St., N.Y.  
Palmer Products, Inc., Waukesha, Wis.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

**SOAP DISPENSERS (Powder)**

- Bobrick Chemical Corp., 111-117 Garey St.,  
Los Angeles  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Imperial Brass Mfg. Co., 1200 W. Harrison St.,  
Chicago  
Packwood Mfg. Co., St. Louis  
Palmer Products, Inc., Waukesha, Wis.  
Presto Mfg. Co., 404—20th Ave.,  
Minneapolis, Minn.  
Procter & Gamble Co., Cincinnati, O.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Vasco Products Co., Elmira, N.Y.

**SOAP DISPENSING SYSTEMS (Multi-unit with Tanks)**

- Bobrick Chemical Corp., 111-117 Garey St.,  
Los Angeles  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Imperial Brass Mfg. Co., 1200 W. Harrison St.,  
Chicago  
Moore Bros. Co., 154 Chambers St., N.Y.  
Palmer Products, Inc., Waukesha, Wis.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

**SOAP DRYERS (see DRYERS)****SOAP, FLAKE (see CHIP SOAP)****SOAP FRAMES (see FRAMES)****SOAP KETTLES (see KETTLES)****SOAP, LINSEED OIL (see LINSEED OIL SOAP)****SOAP MACHINERY**

- Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Wm. Garrigue & Co., 9 S. Clinton St., Chicago  
Houchin Machinery Co., Hawthorne, N.J.  
Huber Mach. Co., 259—46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 West Broadway, N.Y.  
Newman Tallow & Soap Machinery Co.,  
1051 W. 35th St., Chicago (New & Used)  
See page 44.

**SOAP MACHINERY (Cont'd)**

Stein-Brill Corp., 183 Varick St., N.Y.  
(New & Used) See page 63.  
Wurster & Sanger, 5201 Kenwood Ave.,  
Chicago

**SOAP MILLS (see MILLS, TOILET SOAP)****SOAP PERFUMES**

van Ameringen-Haebler, Inc.,  
315—4th Ave., N.Y. See pages 12, 13.  
Budd Aromatic Chem. Co., 667 Washington St.,  
N.Y.  
Ph. Chaleyer, Inc., 200 Varick St., N.Y.  
Compagnie Duval, 121 E. 24th St., N.Y.  
Compagnie Parento, Inc.,  
Croton-on-Hudson, N.Y.  
Dodge & Olcott Co., 180 Varick St., N.Y.  
P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
E. I. du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.  
Evergreen Chemical Co., 160—5th Ave., N.Y.  
Felton Chemical Co., 603 Johnson Ave.,  
Brooklyn See page 30.  
Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.  
See inside front cover, 33  
Heine & Co., 54 Cliff St., N.Y.  
Industrial Organics, 131 E. 45th St., N.Y.  
Lanvoix Chemical Co., 549 W. Randolph St.,  
Chicago  
Lautier Fils, 47 Cliff St., N.Y.  
Geo. Lueders & Co., 427 Washington St., N.Y.  
Magnus, Mabée & Reynard, 32 Cliff St., N.Y.  
Neumann-Buslee & Wolfe, 224 W. Huron St.,  
Chicago  
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.  
Riviera Prods. Co., 215 W. Ohio St., Chicago  
H. C. Ryland, Inc., 161 Water St., N.Y.  
C. A. Seguin Co., 500 N. Dearborn St., Chicago  
Edwin Seebach Co., 912 Broadway, N.Y.  
William G. Sibbach & Co., Maywood, Ill.  
Synfleur Scientific Labs., Monticello, N.Y.  
Ungerer & Co., 13 W. 20th St., N.Y.  
See page facing inside front cover, 65.  
United Laboratories, 15 S. William St., N.Y.  
Van Dyk & Company, 57 Wilkinson Ave.,  
Jersey City, N. J.  
Albert Verley, Inc., 11 E. Austin Ave., Chicago

**SOAP PLANTS (Complete)**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Wm. Garrigue & Co. 9 So. Clinton St., Chgo.  
Houchin Machinery Co., Hawthorne, N.J.  
See page 37.  
Huber Mach. Co., 259—46th St., Brooklyn  
See page 38.  
J. M. Lehmann Co., 248 W. Broadway, N.Y.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Wurster & Sanger, 5201 Kenwood Ave.,  
Chicago

**SOAP POWDER MILLS (see MILLS, SOAP POWDER)****SOAP, POWDERED (White neutral powdered soap. Do not confuse with Soap Powders.)**

Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Wm. Benkert & Co., 100 Gold St., N.Y.  
See page 19.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
J. L. Hopkins & Co., 220 Broadway, N.Y.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Lightfoot Schultz Co., 1412 Park Ave.,  
Hoboken, N. J.  
Los Angeles Soap Co., Los Angeles  
Murray & Nickell Mfg. Co.,  
2608 Arthington St., Chicago  
Peck & Velsor, 76 William St., N.Y.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
S. B. Penick & Co., 132 Nassau St., N.Y.  
John Powell & Co., 114 E. 32nd St., N.Y.  
See pages 51, 52.  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
Swift & Co., Union Stock Yards, Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**SOAP POWDERS**

(Do not confuse with powdered white soap.)

American Soap Powder Wks., Inc.,  
98 Van Dyk St., Bklyn.  
Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Baums Castorine Co., 200 Mathew St.,  
Rome, N.Y.  
Cincinnati Soap Co., Cincinnati  
Dobbins Soap Co., Camden, N. J.  
Du Bois Soap Co., Cincinnati  
J. Eavenson & Sons, Del. & Penn. Sts.,  
Camden, N. J.  
Hewitt Soap Co., Dayton, O.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Lever Brothers Co., Cambridge, Mass.  
National Milling & Chem. Co.,  
Manayunk, Phila.  
North Coast Soap & Chem. Wks.,  
Seattle, Wash.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Procter & Gamble Co., Cincinnati  
Stevens Soap Corp., 200 Sullivan St., Brooklyn  
Swift & Co., Union Stock Yards, Chicago  
Vasco Prods. Co., Elmira, N.Y.  
Vliet Soap Co., 638 Monroe St., Brooklyn  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
M. Werk Co., St. Bernard, Cincinnati  
Chas. W. Young & Co., Phila.

**SOAP PRESSES (see PRESSES)****SOAP SLABBERS (see SLABBERS)****SOAP STOCK**

(see also Brokers and Dealers)

Aspegren & Co., Produce Exchange, N.Y.  
Durkee Famous Foods, Inc., 2670 Elston Ave.,  
Chicago  
Portsmouth Cotton Oil Refining Co.,  
Portsmouth, Va.

**SOAP STOCK (Cont'd)**

Procter & Gamble Co., Cincinnati, O.  
 Rayner & Stonington, 79 Wall St., N.Y.  
 Southern Cotton Oil Co.,  
 Produce Exchange, N.Y.  
 Staley Sales Corp., Decatur, Ill.  
 G. A. Wharry & Co., 15 Moore St., N.Y.

**SOAP, WHALE OIL (see WHALE OIL SOAP)****SOAPS, AUTO (see AUTO SOAPS)****SOAPS, LIQUID (see LIQUID SOAPS, LIQUID SOAP BASE, etc.)****SOAPS, MEDICINAL, CAKE (see MEDICINAL SOAPS, CAKE)****SOAPS, MOTTLED (see MOTTLED SOAPS)****SOAPS, PINE SCRUB (see SCRUBBING SOAPS)****SOAPS, SCOURING (see SCOURING SOAPS)****SOAPS, SCRUBBING (see SCRUBBING SOAPS)****SOAPS, SURGICAL (see SURGICAL SOAPS)****SOAPS, TEXTILE (see TEXTILE SOAPS)****SODA ASH***(see also Dealers)*

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
**Columbia Alkali Co., 350—5th Ave., N.Y.**  
*See page 22.*  
 Diamond Alkali Co., 1st Nat'l Bank Bldg.,  
 Pittsburgh  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
*See page 40.*  
 Mathieson Alkali Wks., 60 E. 42nd St., N.Y.  
 Michigan Alkali Co., 10 E. 40th St., N.Y.  
**Solvay Sales Corp., 61 Broadway, N.Y.**  
*See pages 60, 61.*

**SODA (Modified)***(see also Dealers)*

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
**Columbia Alkali Co., 350—5th Ave., N.Y.**  
*See page 22.*  
 Diamond Alkali Co., 1st Nat'l Bank Bldg.,  
 Pittsburgh

**Innis, Speiden & Co., 117 Liberty St., N.Y.***See page 40.*

H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 Mathieson Alkali Wks., 60 E. 42nd St., N.Y.  
 Mechling Bros. Chemical Co.,  
 Line St. & Coopers Creek, Camden, N.J.  
 Philadelphia Quartz Co., 121 S. 3rd St.,  
 Philadelphia, Pa.

**Solvay Sales Corp., 61 Broadway, N.Y.***See pages 60, 61.***SODIUM BICARBONATE***(see also Dealers)*

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 Church & Dwight Co., 70 Pine St., N.Y.  
 Diamond Alkali Co., 1st Nat'l Bank Bldg.,  
 Pittsburgh  
**Grasselli Chemical Co., 1300 Guardian Bldg.,  
 Cleveland**  
*See page 35.*  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
*See page 40.*  
 Mathieson Alkali Works, 60 E. 42nd St., N.Y.  
 Mechling Bros. Chemical Co.,  
 Line St. & Coopers Creek, Camden, N.J.  
 Michigan Alkali Co., 10 E. 40th St., N.Y.  
 Pennsylvania Salt Mfg. Co., Widener Bldg.,  
 Philadelphia  
 Swann Chemical Co., 420 Lexington Ave., N.Y.  
 Victor Chem. Wks., 141 W. Jackson Blvd.,  
 Chicago, Ill.

**SODIUM BICHROMATE***(see also Dealers)*

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,  
 Cleveland**  
*See page 35.*  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
*See page 40.*  
 Mutual Chemical Co., 270 Madison Ave., N.Y.  
 Natural Products Refining Co.,  
 900 Garfield Ave., Jersey City, N. J.

**SODIUM CHOLATE (Bile Salt)**

Digestive Ferments Co., Detroit  
 R. W. Greff & Co., 10 E. 40th St., N. Y.  
 Wilson Labs., 4221 S. Western Ave., Chicago

**SODIUM FLUORIDE***(see also Dealers)*

American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 American Fluoride Corp.,  
 151 W. 19th St., N.Y.  
**General Chemical Co., 40 Rector St., N.Y.**  
*See page 32.*  
 Harshaw Chemical Co., 1945 E. 97th St.,  
 Cleveland  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
*See page 40.*  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Merck & Co., Rahway, N. J.  
 Pfaltz & Bauer, 300 Pearl St., N.Y.  
 Wjarda & Hall Acid Wks., 514 Gardner Ave.,  
 Brooklyn, N.Y.



**SODIUM HYDROSULFITE***(see also Dealers)*

- J. T. Baker Chem. Co., Phillipsburg, N. J.  
**E. I. du Pont de Nemours & Co.,** See page 4.  
 Wilmington, Del.  
 General Dyestuff Corp., 230—5th Ave., N.Y.  
**Grasselli Chem. Co., 1300 Guardian Bldg.**  
 Cleveland See page 35.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Rohm & Haas Co., Inc.,  
 22 W. Washington Sq., Phila. See page 57.  
 Royce Chemical Co., Carlton Hill, N.J.

**SODIUM LAUYRL SULFATE (see  
SULFONATED FATTY ALCOHOLS)****SODIUM METASILICATE**

- Cowles Detergent Co., 7016 Euclid Ave.,  
 Cleveland  
**General Chem. Co., 40 Rector St., N.Y.**  
 See page 32.  
**Grasselli Chem. Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.  
 Mechling Bros. Chemical Co., Camden, N.J.  
 Philadelphia Quartz Co., 121 So. 3rd St., Phila.  
 Standard Silicate Co., Koppers Bldg.,  
 Pittsburgh

**SODIUM NAPHTHENATE**

- E. I. du Pont De Nemours & Co.,**  
 Wilmington, Del. See page 4.  
 General Dyestuffs Corp., 230—5th Ave., N.Y.  
 National Aniline & Chem. Co., 40 Rector St.,  
 N.Y.

**SODIUM PERBORATE***(see also Dealers)*

- E. I. du Pont de Nemours & Co.,**  
 Wilmington, Del. See page 4.  
**Grasselli Chem. Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.

**SODIUM SESQUICARBONATE**

- Diamond Alkali Co., 1st Nat'l Bank Bldg.,  
 Pittsburgh  
 Mathieson Alkali Wks., 60 E. 42nd St., N.Y.  
 Mechling Bros. Chemical Co.,  
 Line St. & Coopers Creek, Camden, N.J.  
**Solvay Sales Corp., 61 Broadway, N.Y.**  
 See pages 60, 61.

**SODIUM SESQUISILICATE**

- Philadelphia Quartz Co., 121 S. 3rd St., Phila.

**SODIUM SILICATE***(see also Dealers)*

- General Chemical Co., 40 Rector St., N.Y.**  
 See page 32.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.  
 Mechling Bros. Chem. Co., Camden, N.J.

- Philadelphia Quartz Co., 121 S. 3rd St.,  
 Philadelphia  
 Standard Silicate Co., Koppers Bldg.,  
 Pittsburgh

**SODIUM SILICOFLUORIDE**

- American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 American Fluoride Corp.,  
 151 W. 19th St., N.Y.  
 Blockson Chemical Co., Joliet, Ill.  
**Grasselli Chemical Co., 1300 Guardian Bldg.,**  
 Cleveland See page 35.  
 Harshaw Chemical Co., 1945 E. 97th St.,  
 Cleveland  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 Merck & Co., Rahway, N. J.  
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

**SOLVENT NAPHTHA**

- Barrett Co., 40 Rector St., N.Y.** See page 18.  
 S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh  
 Deep Rock Oil Corp., 155 N. Clark St., Chicago  
 Wm. E. Jordan & Bro., 2590 Atlantic Ave.,  
 Brooklyn  
**Koppers Products Co., Pittsburgh**  
 See page 41.

- Neville Chemical Co., Pittsburgh  
 Shell Petroleum Corp., Shell Bldg., St. Louis

**SOLVENTS, PETROLEUM**

- American Mineral Spirits Co.,  
 330 S. Michigan Ave., Chicago  
 Anderson-Pritchard Oil Co., Oklahoma City,  
 Okla.  
 Deep Rock Oil Corp., 155 N. Clark St., Chicago  
 Skelly Oil Corp., 2534 Madison Ave.,  
 Kansas City, Mo.  
 Sinclair Refining Co., 45 Nassau St., N.Y.  
**L. Sonneborn Sons, 88 Lexington Ave., N.Y.**  
 See page 62.

**SOYA BEAN OIL***(see also Brokers and Dealers)*

- Irving R. Boody & Co., 99 Wall St., N.Y.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 William O. Goodrich Co., Milwaukee, Wis.  
 W. R. Grace & Co., 7 Hanover Sq., N.Y.  
 Otto A. C. Hagen Co., 929 Ledger Bldg.,  
 Phila.  
 Spencer Kellogg & Son, Buffalo, N.Y.  
 Mitsubishi Shoji Kaisha, 120 Broadway, N.Y.  
 Mitsui & Co., 350—5th Ave., N.Y.  
 Murray Oil Products Co., 21 West St., N.Y.  
 Purina Mills, St. Louis  
 Raclin, Snow & Cleaver, 15 William St., N.Y.  
 See page 53.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
**Smith-Weihman Co., 15 Moore St., N.Y.**  
 See page 59.  
 Staley Sales Corp., Decatur, Ill.  
 United Africa Co., 67 Wall St., N.Y.  
**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**  
 See inside back cover.



**SPERMACE**

E. A. Bromund Co., 258 Broadway, N.Y.  
 William H. Dey & Co., 11 Water St., N.Y.  
 A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Neumann-Buslee & Wolfe, 224 W. Huron St.,  
 Chicago, Ill.  
 L. A. Salomon & Bro. 216 Pearl St., N.Y.  
 Werner G. Smith Co., 2191 W. 110th St.,  
 Cleveland  
 Smith & Nichols, 121 Maiden Lane, N.Y.  
 Strohmeyer & Arpe Co.,  
 139 Franklin St., N.Y.

**SPONGES**

Allied Industrial Prods. Co.,  
 17 N. Elizabeth St., Chicago  
 American Sponge & Chamois Co.,  
 23 Beekman St., N.Y.  
 American Standard Mfg. Co.,  
 2509 Lime St., Chicago  
 Atlas Sponge Co., 291 Church St., N.Y.  
 Florida Sponge & Chamois Co.,  
 71 Gold St., N.Y.  
 James H. Rhodes & Co., 157 Austin Ave.,  
 Chicago  
 Robinson Sponge Co., 1727 Atlantic Ave.,  
 Brooklyn

**SPRAY PERFUMES (see PERFUMING COMPOUNDS)****SPRAY POWDERS (see SOAP POWDERS)****SPRAYERS, COMPRESSED AIR**

Acmeline, Inc., Traverse City, Mich.  
**Breuer Electric Mfg. Co., 852 Blackhawk St.,**  
**Chicago** See page 20.  
 E. C. Brown Co., Rochester, N.Y.  
 De Vilbiss Co., Toledo, O.  
 Dobbins Mfg. Co., North St. Paul St., Minn.  
**Hudson Mfg. Co., 589 E. Illinois St., Chicago**  
 See page 39.  
 Imperial Brass Mfg. Co., 1200 W. Harrison St.,  
 Chicago  
 Lowell Sprayer Co., Lowell, Mich.  
 D. B. Smith & Co., Utica, N.Y.  
 Simmons Paint Spray Brush Co., Dayton, O.  
 Spraco, Inc., 114 Central St., Somerville, Mass.

**SPRAYERS, CONTINUOUS HAND**

Acmeline, Inc., Traverse City, Mich.  
 American Can Co., 230 Park Ave., N.Y.  
 E. C. Brown Co., Rochester, N.Y.  
**Continental Can Co., Inc.,**  
**100 E. 42nd St., N.Y.** See page 24.  
 Dobbins Mfg. Co., North St. Paul, Minn.  
 Electric Sprayit Co., 2102 E. Colfax St.,  
 South Bend, Ind.  
**Hudson Mfg Co., 589 E. Illinois St., Chicago**  
 See page 39.  
 Jaekch Mfg. Co., Cincinnati  
 Lowell Sprayer Co., Lowell, Mich.  
 D. B. Smith & Co., Utica, N.Y.  
 Wm. Vogel & Bros., 37 S. 9th St.,  
 Brooklyn, N.Y.

**SPRAYERS, ELECTRIC**

**Breuer Electric Mfg. Co., 852 Blackhawk St.,**  
**Chicago** See page 20.  
 Dobbins Mfg. Co., North St. Paul, Minn.  
 Electric Sprayit Co., South Bend, Ind.  
**Hudson Mfg. Co., 589 E. Illinois St., Chicago**  
 See page 39.  
 Lowell Sprayer Co., Lowell, Mich.  
 Metal Specialties Mfg. Co., 3208 Carroll Ave.,  
 Chicago  
 D. B. Smith Co., Utica, N.Y.

**SPRAYERS, ELECTRIC STEAM**

Electric Sprayit Co., South Bend, Ind.  
 Kaz Mfg. Co., Chrysler Bldg., N.Y.  
 Manning-Bowman Co., Meriden, Conn.

**SPRAYERS, for Powders (see Bellows)****SPRAYERS, HAND**

Acmeline, Inc., Traverse City, Mich.  
 E. C. Brown Co., Rochester, N.Y.  
**Continental Can Co., 100 E. 42nd St., N.Y.**  
 See page 24.  
 Dobbins Mfg Co., North St. Paul, Minn.  
 Electric Sprayit Co., 2102 E. Colfax St.,  
 South Bend, Ind.  
**Hudson Mfg. Co., 589 E. Illinois St., Chicago**  
 See page 39.  
 Jaekch Mfg. Co., Cincinnati  
 Lowell Sprayer Co., Lowell, Mich.  
 F. E. Meyers & Bro. Co., Ashland, O.  
 D. B. Smith Co., Utica, N.Y.  
 Wm. Vogel & Bros., 37 S. 9th St.,  
 Brooklyn, N.Y.

**SPRAYERS, MOUTH**

Larvex Corp., Chrysler Bldg., N.Y.  
 Lowell Sprayer Co., Lowell, Mich.  
 D. B. Smith & Co., Utica, N.Y.

**SQUILLS (Rodent Poison)**

**Wm. Benkert & Co., 100 Gold St., N.Y.**  
 See page 19.  
 J. L. Hopkins & Co., 220 Broadway, N.Y.  
 McLaughlin Gormley King Co.,  
 1715—5th St., S. E., Minneapolis, Minn.  
 Murray & Nickell Mfg. Co.,  
 2608 Arthington St., Chicago  
 S. B. Penick & Co., 132 Nassau St., N.Y.  
**John Powell & Co., 114 E. 32nd St., N.Y.**  
 See pages 51, 52.

**STARCH**

(see also Dealers)

Arabol Mfg. Co., 110 E. 42nd St., N.Y.  
 Chicago Starch Co., 2708 S. Throop St.,  
 Chicago  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Keever Starch Co., Columbus, O.  
 H. Kohnstamm & Co., 91 Park Pl., N.Y.  
 National Adhesives Corp.,  
 820 Greenwich St., N.Y.  
 National Starch Co., 17 Battery Pl., N.Y.  
 Staley Sales Corp., Decatur, Ill.

**STEAM SPRAYERS (see SPRAYERS, ELECTRIC, STEAM)****STEARATES***(see also Dealers)*

Franks Chem. Prods. Co.,  
55—33rd St., Brooklyn  
Harshaw Chemical Co., 1945 E. 97th St.,  
Cleveland  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Mallinckrodt Chem. Wks., St. Louis  
Metasap Chemical Co., Harrison, N. J.  
M. W. Parsons, Inc., 55 Ann St., N.Y.

**STEARIC ACID***(see also Brokers and Dealers)*

Celina Stearic Acid Co., Celina, Ohio  
Century Stearic Acid Candle Wks.,  
22 E. 40th St., N.Y.  
Darling & Co., 4201 S. Ashland Ave., Chicago  
Emery Industries, Inc., 4300 Carew Tower,  
Cincinnati  
A. Gross & Co., 122 E. 42nd St., N.Y.  
Harkness & Cowing, Ivorydale, Cincinnati  
Procter & Gamble Co., Cincinnati  
Theobald Animal By-Products Co.,  
Kearny, N.J.  
M. Werk Co., St. Bernard, Cincinnati  
Will & Baumer Candle Co., Syracuse, N.Y.  
Wilson-Martin Co., Snyder Ave. &  
Swanson St., Philadelphia  
Wishnick-Tumpeier, Inc., 253 Front St., N.Y.

**STEARINE***(see also Brokers and Dealers)*

Celina Stearic Acid Co., Celina, Ohio  
Durkee Famous Foods, Inc., 2670 Elston Ave.,  
Chicago  
Emery Industries, Inc., 4300 Carew Tower,  
Cincinnati  
Morris & Co., Union Stock Yards, Chicago  
Procter & Gamble Co., Cincinnati  
**Raclin, Snow & Cleaver, 15 William St., N.Y.**  
See page 55.  
**Smith-Weihman Co., 15 Moore St., N.Y.**  
See page 59.  
Louis Stern Sons, Inc., Produce Exch., N.Y.  
Swift & Co., Union Stock Yards, Chicago  
Wilson & Co., 4100 Ashland Ave., Chicago

**STEEL DRUMS (see DRUMS, STEEL)****STEEL PAILS (see PAILS, STEEL)****STEEL TANKS (see TANKS, STEEL)****STEEL WOOL**

Allied Industrial Products Co.,  
19 N. Elizabeth St., Chicago  
American Steel Wool Mfg. Co.,  
9 Desbrosses St., N.Y.  
International Steel Wool Co., Springfield, Ohio  
James H. Rhodes & Co., W. Austin Ave.,  
Chicago  
Whiskette Co., Terre Hill, Pa.

**STORAGE TANKS (see TANKS, STORAGE, etc.)****SULFONATED OILS**

Kali Mfg. Co., 1408 N. Front St., Philadelphia  
National Oil Products Co., Harrison, N. J.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Richards Chemical Works, Jersey City, N.J.  
**L. Sonneborn Sons, Inc., 88 Lexington Ave.,  
N.Y.** See page 62.  
Wecoline Prods. Co., 15 E. 26th St., N.Y.  
Jacques Wolfe & Co., Passaic, N.J.

**SULFONATED FATTY ALCOHOLS**

**E. I. Du Pont de Nemours & Co.,  
Wilmington, Del.** See page 4.  
General Dyestuffs Corp., 230—5th Ave., N.Y.  
Hummel Chemical Co., 90 West St., N.Y.  
National Aniline & Chem. Co., 40 Rector St.,  
N.Y.  
Procter & Gamble Co., Cincinnati  
Jacques Wolfe & Co., Passaic, N.J.

**SULFOXYLATES (Soap Bleaches)**

Rohm & Haas Co., Inc.,  
222 W. Washington St., Phila., See page 57.  
Jacques Wolfe & Co., Passaic, N.J.

**SUPERFATTING AGENTS**

Pfaltz & Bauer, 300 Pearl St., N.Y.  
**Pylam Products Co., 799 Greenwich St., N.Y.**  
See page 54.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.

**SUPERHEATERS**

Eureka Machine Co., 2601 Vega Ave., Cleveland  
William Garrigue & Co., 9 S. Clinton St.,  
Chicago  
Ernest Scott & Co., Fall River, Mass.  
The Superheater Co., 17 E. 42nd St., N.Y.  
Wurster & Sanger, 5201 Kenwood Ave.,  
Chicago

**SURGICAL SOAPS**

Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Clifton Chem. Co., 247 Front St., N.Y.  
See page 21.  
Davies-Young Soap Co., Dayton, O.  
See page 25.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Harley Soap Co., 2832 E. Pacific St., Phila.  
Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Jansen Soap & Chem. Co., 324 Leavenworth St.,  
San Francisco  
Kranich Soap Co., 54 Richards St., Brooklyn  
H. Kohnstamm & Co., 91 Park Place, N.Y.  
Marshall Prods., Inc., 806 N. 1st St. St. Louis  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis

**SURGICAL SOAPS (Cont'd)**

Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.

**SWEEPING COMPOUNDS**

Champion Mfg. Co., 322 S. Erie St.,  
Indianapolis, Ind.  
Creco Co., Inc., Creco Bldg.,  
Long Island City, N.Y.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Hockwald Chem. Co., 30 Bluxome St.,  
San Francisco  
Marshall Prods., Inc., 806 N. 1st St. St. Louis  
North Coast Soap & Chem Wks.,  
Seattle, Wash.  
Pacific Chem. Co., 1421 N. Main St.,  
Los Angeles  
Palmer Products, Inc., Waukesha, Wis.  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Sanco Prods. Inc., Greenville, O.  
Trojan Prods. Co., 241 W. Van Buren St.,  
Chicago  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

**TALC**

Binney & Smith Co., 41 E. 42nd St., N.Y.  
Blue Ridge Talc Co., Henry, Va.  
Chas. B. Chrystal Co., 11 Park Place, N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Eastern Magnesia Talc Co., Burlington, Vt.  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
Georgia Talc Co., Asheville, N. C.  
Goris & Arnstein, 37th & Racine Ave., Chicago  
Hammill & Gillespie, 225 Broadway, N.Y.  
Innis, Spiden & Co., 117 Liberty St., N.Y.  
See page 40.  
Los Angeles Talc Co., Los Angeles, Cal.  
Charles Mathieu, Inc., 24 Stone St., N.Y.  
Pacific Coast Talc Co., Los Angeles, Cal.  
L. A. Salomon & Bro., 216 Pearl St., N.Y.  
E. M. Sergeant Pulp & Chemical Co.,  
350—5th Ave., N.Y.  
Union Talc Co., 147 Nassau St., N.Y.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.  
Whittaker, Clark & Daniels, 245 Front St., N.Y.  
Wishnick-Tumpeper, Inc., 253 Front St., N.Y.

**TALLOW***(see also Brokers and Dealers)*

Armour & Co., 1355 W. 31st St., Chicago  
See page 14.  
Belleville Rendering Co., Belleville, Ill.  
Consolidated Rendering Co., 40 N. Market St.,  
Boston  
Cudahy Packing Co., 111 W. Monroe St.,  
Chicago  
Darling & Co., 4201 So. Ashland Ave.,  
Chicago

Louisville Butchers' Hide & Tallow Co.,  
Louisville, Ky.  
Raclin, Snow & Cleaver, 15 William St., N.Y.  
See page 55.

Louis Stern Sons, Inc.,  
Produce Exchange, N.Y.  
Swift & Co., Union Stock Yards, Chicago  
Theobald Animal By-Products Co.,  
Kearny, N.J.  
Toledo Tallow Co., Toledo, Ohio  
Waltham Tallow Co., Waltham, Mass.  
Wilbur-Ellis Co., 17 Battery Pl., N.Y.  
See inside back cover.  
Wilson & Co., Union Stock Yards, Chicago  
Wilson-Martin Co., Swanson St., Phila.

**TALLOW CHIP SOAP (see CHIP SOAPS)****TALLOW OIL***(see also Brokers and Dealers)*

Armour & Co., 1355 W. 31st St., Chicago  
See page 14.  
Consolidated Rendering Co., 40 N. Market St.,  
Boston  
Cudahy Packing Co., 111 W. Monroe St.,  
Chicago  
Louis Stern Sons, Inc.,  
Produce Exchange, N.Y.  
Toledo Tallow Co., Toledo, O.  
Waltham Tallow Co., Waltham, Mass.  
Wilson & Co., Union Stock Yards, Chicago

**TANKS (Glass Lined Mixing and Storage)**

Alsop Engineering Corp., 39 W. 60th St., N.Y.  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Metal Glass Products Corp., Belding, Mich.  
Mixing Equipment Co., 1024 Garson Ave.,  
Rochester, N.Y.  
Newman Tallow & Soap Machy Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Pfaudler Co., 89 East Ave., Rochester, N.Y.  
Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.  
Vitreous Enamel Co., 6700 Grant Ave.,  
Cleveland

**TANKS (for Liquid Soap Dispensing Systems)**

Bobrick Chemical Corp., 111-117 Garey St.,  
Los Angeles  
Brighton Copper Works, 2163 Western Ave.,  
Cincinnati  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Eagle Soap Corp., Huntington, Ind.  
See page 28.  
Imperial Brass Mfg. Co., 1200 W. Harrison St.,  
Chicago  
Moore Brothers Co., 154 Chambers St., N.Y.  
Palmer Prods., Inc., Waukesha, Wis.  
John Trageser Steam Copper Works,  
Grand Ave., Maspeth, L. I., N.Y.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
Wm. Vogel & Bros., 37 S. 9th St.,  
Brooklyn, N.Y.

**TANKS (Steel Mixing and Storage)**

Alloy Prods. Corp., 221 Madison St.,  
Waukesha, Wisc.  
Alsop Engineering Corp., 39 W. 60th St., N.Y.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
(Used) See page 23.  
J. H. Day Co., 1144 Harrison Ave., Cincinnati  
Graver Tank & Mfg. Corp., 28 E. Jackson Blvd.,  
Chicago  
**Houchin Machinery Co., Hawthorne, N.J.**  
See page 37.  
**Huber Mach. Co., 259—46th St., Brooklyn**  
See page 38.  
Illino's Steel Corp., 208 S. LaSalle St.,  
Chicago  
Lancaster Iron Works, 564 S. Prince St.,  
Lancaster, Pa.  
J. M. Lehmann Co., 248 W. Broadway, N.Y.  
Littleford Bros., 451 E. Pearl St., Cincinnati  
Lukeus Steel Corp., Coatesville, Pa.  
**Newman Tallow & Soap Machinery Co.,**  
1051 W. 35th St., Chicago  
See page 44.

Patterson Foundry & Machine Co.,  
East Liverpool, Ohio  
Petroleum Iron Works, Sharon, Pa.  
Pfaudler Co., Rochester, N.Y.  
Pioneer Tank & Boiler Co., Tulsa, Okla.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
(Used) See page 63.  
Struthers-Wells Co., Warren, Pa.  
John Trageser Steam Copper Works,  
Grand St., Maspeth, L. I., N.Y.

**TANKS (Wooden Mixing and Storage)**

Atlantic Tank & Barrel Co.,  
North Bergen, N. J.  
**Consolidated Prods. Co., 15 Park Row, N.Y.**  
(Used) See page 23.  
J. H. Day Co., 1144 Harrison Ave., Cincinnati  
General Tank Corp., 30 Church St., N.Y.  
Hauser-Stander Tank Co., Ivorydale, Cinn.  
Kalamazoo Tank & Silo Co.,  
Kalamazoo, Mich.  
**Newman Tallow & Soap Machy. Co.,**  
1051 W. 35th St., Chicago (Used)  
See page 44.  
New England Tank & Tower Co.,  
Everett, Mass.  
Pacific Tank & Pipe Co., 334 Market St.,  
San Francisco  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
(Used) See page 63.  
Tippett & Wood, Phillipsburg, N. J.

**TAR ACID OIL**

**Baird & McGuire, Inc., Holbrook, Mass.**  
See pages 16, 17.  
**Barrett Co., 40 Rector St., N.Y.** See page 18.  
S. H. Bell Co., 1407 Gulf Bldg., Pittsburgh  
Dominion Tar & Chem. Co., Ltd.,  
430, Canada Cement Bldg., Montreal,  
Que., Canada  
William E. Jordan & Bro., 2590 Atlantic Ave.,  
Brooklyn  
**Koppers Prods. Co., Koppers Bldg., Pittsburgh**  
See page 41.  
Merck & Co., Rahway, N.J.  
**Reilly Tar & Chem. Co., Indianapolis**  
See page 56.

**TERPENELESS OILS (see ESSENTIAL OILS)****TERPENYL ACETATE (see AROMATIC CHEMICALS)****TERPINEOL**(see also *Essential Oils*)

Dodge & Olcott Co., 180 Varick St., N.Y.  
P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
Fritzsche Brothers, Inc., 78 Beekman St., N.Y.  
**Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.**  
See inside front cover, 33.  
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.  
Sherka Chemical Co., 86 Orange St.,  
Bloomfield, N.J.  
**Ungerer & Co., 13 W. 20th St., N.Y.**  
See page facing front cover, 65.

**TETRALIN**

**E. I. Du Pont de Nemours & Co.,**  
Wilmington, Del. See page 4.

**TEXTILE SOAPS**

**Armour Soap Wks., 1355 W. 31st St., Chicago**  
See page 4.

J. O. Draper Co., Pawtucket, R. I.  
J. Eavenson & Sons, Del. & Penn Sts.,  
Camden, N. J.  
Enterprise Mill Soap Wks., 2231 N. 12th St.,  
Philadelphia  
**Fuld Bros., 2308 Frederick Ave., Baltimore**  
See page 31.

Arnold Hoffman & Co., Providence, R. I.  
Iowa Soap Co., 810 Valley St., Burlington, Ia.  
H. Kohnstamm & Co., 91 Park Pl., N.Y.  
Laurel Soap Mfg. Co., Tioga St., Phila.  
Los Angeles Soap Co., Los Angeles, Cal.  
Marshall Prods., Inc., 806 N. 1st St., St. Louis  
National Oil Products Co., Harrison, N.J.  
National Soap Co., 357 South 25th St.,  
Tacoma, Wash.  
Newell Gutrad & Co., 350 Fremont St.,  
San Francisco  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Procter & Gamble Co., Cincinnati  
Rome Soap Mfg. Co., Rome, N.Y.  
Scholler Bros., Philadelphia  
Geo. E. Sherman Co., 153 Classon Ave.,  
Brooklyn, N.Y.  
Swift & Co., Union Stock Yards, Chicago  
Ultra Chem. Wks., Inc., Kitay Bldg.,  
Paterson, N. J.  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
M. Werk Co., St. Bernard, Cincinnati  
Jacques Wolf & Co., Passaic, N. J.  
Chas. W. Young & Co., 1247 N. 26th St., Phila.

**THALLIUM SULFATE (Rat Poisons)**

American Fluoride Corp., 151 W. 19th St., N.Y.  
Foote Mineral Co., 1606 Summer St., Phila.  
Hugo Falck & Co., 25 Broadway, N.Y.  
Jungmann & Co., 157 Chambers St., N.Y.

**THALIAM SULFATE (Cont'd)**

Ore & Chemical Corp., 40 Rector St., N.Y.  
Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

**THEATRE SPRAY BASES (see PETROLEUM BASES)****THEATRE SPRAY PERFUMES**

van Ameringen-Haebler, Inc.,  
315—4th Ave., N.Y. See pages 12, 13.  
Budd Aromatic Chemical Co.,  
667 Washington St., N.Y. See page 22.  
Ph. Chaleyer, Inc., 200 Varick St., N.Y.  
Compagnie Duval, 121 E. 24th St., N.Y.  
Compagnie Parento, Inc.,  
Croton-on-Hudson, N.Y.  
Dodge & Olcott Co., 180 Varick St., N.Y.  
P. R. Dreyer Inc., 12 E. 12th St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
E. I. du Pont de Nemours & Co.,  
Wilmington, Del. See page 4.  
Evergreen Chemical Co., 160—5th Ave., N.Y.  
Felton Chemical Co., 603 Johnson Ave., Bklyn.  
Fritzsche Bros., Inc., 78 Beekman St., N.Y.  
Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.  
See inside front cover, 33.  
Heine & Co., 54 Cliff St., N.Y.  
Pierre Lemoine, Inc., 200 Varick St., N.Y.  
Geo. Lueders & Co., 427 Washington St., N.Y.  
Magnus, Mabree & Reynard, 32 Cliff St., N.Y.  
A. Maschmeijer, Jr., Inc., 43 W. 16th St., N.Y.  
Neumann-Buslee & Wolfe, 224 W. Huron St.,  
Chicago  
Pfaltz & Bauer, 300 Pearl St., N.Y.  
Polak's Frutal Wks., Inc., 350 W. 31st St., N.Y.  
Riviera Products Co., 215 W. Ohio St.,  
Chicago  
H. C. Ryland, Inc., 161 Water St., N.Y.  
C. A. Seguin Co., 500 N. Dearborn St., Chicago  
Wm. G. Sibbach & Co., 201 S. 2nd Ave.,  
Maywood, Ill.  
Synteur Scientific Labs., Monticello, N.Y.  
Ungerer & Co., 13 W. 20th St., N.Y.  
See page facing inside front cover, 65.  
United Laboratories, 8 E. 12th St., N.Y.  
Van Dyk & Co., 57 Wilkinson Ave.,  
Jersey City, N.J.  
Albert Verley, Inc., 11 E. Austin Ave., Chicago

**THEATRE SPRAYS**

Chemical Compounding Corp., 262 Huron St.,  
Brooklyn  
Chemical Supply Co., 2450 Canal Rd., Cleveland  
Clifton Chemical Co., 247 Front St., N.Y.  
See page 21.  
Creco Co., Inc., Creco Bldg., Long Island City,  
N.Y.  
Eagle Soap Corp., Huntington, Ind. See page 28.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
James Good, Inc., Kensington, Philadelphia  
See page 34.  
Goulard & Olena, 140 Liberty St., N.Y.  
Hockwald Chemical Co., 436 Bryant St.,  
San Francisco  
Hysan Prods. Co., 2560 Armitage Ave., Chicago

Jansen Soap & Chem. Co., 324 Leavenworth St.,  
San Francisco  
Marshall Prods., Inc., 806 N. 1st St., St. Louis  
Palmer Products, Inc., Waukesha, Wis.  
Peck's Prods. Co.,  
522-40 N. 2nd St., St. Louis  
Theo. B. Robertson Prods. Co.,  
700 W. Division St., Chicago  
Selig Co., 336 Marietta St., Atlanta, Ga.  
Shores Co., Cedar Rapids, Ia.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago  
World Spray Co., Inc., 5117 Central Ave.,  
Los Angeles

**THERMOMETERS (see INSTRUMENTS)****THYME OIL (see ESSENTIAL OILS)****THYMOL (see AROMATIC CHEMICALS)****TIGHT WRAPPING MACHINERY (see WRAPPING MACHINERY)****TIN CRYSTALS**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
J. T. Baker Chem. Co., Phillipsburg, N. J.  
General Chemical Co., 40 Rector St., N.Y.  
See page 32.  
Grasselli Chemical Co., 1300 Guardian Bldg.,  
Cleveland See page 35.  
Metal & Thermit Corp., 120 Broadway, N.Y.

**TOILET GOODS (see TOILET PREPARATIONS)****TOILET GOODS COLORS**

(see also *Perfuming Compounds*,  
American Aniline Prods., Inc.,  
45 E. 17th St., N.Y.  
Dyestuffs & Chemicals, Inc.,  
11th & Monroe Sts., St. Louis  
Fezandie & Sperrle, 205 Fulton St., N.Y.  
Geigy Co., 89 Barclay St., N.Y.  
General Dyestuffs Corp., 230—5th Ave., N.Y.  
Interstate Color Co., Inc., 5 Beekman St., N.Y.  
H. Kohnstamm & Co., 91 Park Place, N.Y.  
Leeben Chemical Co.,  
389 Washington St., N.Y.  
National Aniline & Chemical Co.,  
40 Rector St., N. Y.  
Pylam Products Co., 799 Greenwich St., N.Y.  
See page 54.

Sandoz Chemical Works,  
61 Van Dam St., N.Y.  
Welch, Holme & Clark Co., Inc.,  
563 Greenwich St., N.Y.

**TOILET PAPER**

Brown Co., Portland, Me.  
Hoberg Paper & Fibre Co., Green Bay, Wis.  
Scott Paper Co., Chester, Pa.  
Straubel Paper Co., Green Bay, Wis.  
U. S. Envelope Co., Lititz, Pa.



**TOILET PREPARATIONS***(see also Bath Salts, Shampoos, etc.)*

Cincinnati Soap Co.,  
7th & Elm Sts., Cincinnati  
Commercial Labs., Newark, N.Y. State  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Lightfoot Schultz Co., 1412 Park Ave.,  
Hoboken, N. J.  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
Shores Co., Cedar Rapids, Ia.  
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

McKesson & Robbins, 79 Cliff St., N.Y.  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
Shores Co., Cedar Rapids, Ia.  
Strong Cobb & Co., Cleveland  
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**TOWELS, PAPER (see PAPER TOWELS)****TRIETHANOLAMINE (see  
ETHANOLAMINE)****TOILET SOAP BASE (for CAKES)**

Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.

Cincinnati Soap Co.,  
7th & Elm Sts., Cincinnati  
Colgate-Palmolive-Peet Co., Jersey City, N.J.  
Hewitt Soap Co., Dayton, O.  
Holbrook Mfg. Co., 18th St., Jersey City, N. J.  
Los Angeles Soap Co., Los Angeles, Cal.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Procter & Gamble Co., Cincinnati  
J. T. Robertson Co., Syracuse, N.Y.  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
Swift & Co., Chicago  
Allen B. Wrisley Co., 6801 W. 65th St., Chicago

**TRIPOLI**

Allied Industrial Prods. Co.,  
17 N. Elizabeth St., Chicago  
Barnsdall Tripoli Co., Seneca, Mo.  
Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
Goris & Arnstein, 3700 Racine Ave., Chicago  
K. F. Griffiths, 110 E. 42nd St., N.Y.  
Hammill & Gillespie, 225 Broadway, N.Y.  
Independent Gravel Co., Joplin, Mo.  
International Silica Co., Cairo, Ill.  
Tamms Silica Co., 228 N. La Salle St., Chicago  
Whittaker, Clark & Daniels, Inc.,  
245 Front St., N.Y.  
Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

**TOILET SOAP MILLS (see MILLS, TOILET  
SOAP)****TOILET SOAPS (Cakes)**

Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.

Cincinnati Soap Co., Cincinnati  
Colgate-Palmolive-Peet Co., Jersey City, N.J.  
J. Eavenson & Sons, Del. & Penn Sts.,  
Camden, N. J.  
Hewitt Soap Co., Dayton, O.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Larkin Co., Buffalo, N.Y.  
Lightfoot Schultz Co., 1412 Park Ave.,  
Hoboken, N. J.  
Los Angeles Soap Co., Los Angeles, Cal.  
National Soap Co., Box 1613, Tacoma, Wash.  
Newell, Guttradt Co., 350 Fremont St.,  
San Francisco  
North Coast Soap & Chem. Wks.,  
Seattle, Wash.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
J. T. Robertson Co., 147 Richmond Ave.,  
Syracuse, N.Y.  
Geo. A. Schmidt Co., 236 W. North Ave.,  
Chicago  
John T. Stanley Co., 640 W. 30th St., N.Y.  
Swift & Co., Chicago  
Vliet Soap Co., 638 Monroe St., Brooklyn  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.  
M. Werk Co., St. Bernard, Cincinnati  
Allen B. Wrisley Co., 6801 W. 65th St., Chicago  
Chas. W. Young & Co., Philadelphia

**TRISODIUM PHOSPHATE***(see also Brokers and Dealers)*

American Cyanamid & Chemical Corp.,  
30 Rockefeller Plaza, N.Y.  
Blockson Chemical Co., Joliet, Ill.  
Bowker Chem. Co., 50 Church St., N.Y.  
General Chemical Co., 40 Rector St., N.Y.  
See page 32.  
Grasselli Chemical Co., 1300 Guardian Bldg.,  
Cleveland See page 35.  
Harshaw Chemical Co., 1945 E. 97th St.,  
Cleveland  
International Agricultural Corp.,  
61 Broadway, N.Y.  
A. R. Maas Chem. Co., 308 E. 8th St.,  
Los Angeles  
Swann Chemical Co., 420 Lexington Ave., N.Y.  
Victor Chemical Works,  
141 W. Jackson Blvd., Chicago  
Virginia-Carolina Chem. Corp., Richmond, Va.  
Warner Chemical Co., 405 Lexington Ave., N.Y.  
See page 66.

**TRUCKS (Portable)**

American Car & Foundry Co.,  
30 Church St., N.Y.  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
J. H. Day Co., 1144 Harrison Ave., Cincinnati  
Fairbanks, Morse & Co., 900 S. Wabash St.,  
Chicago  
Houchin Machinery Co., Hawthorne, N.J.  
See page 37.  
Huber Mach. Co., 265—46th St., Brooklyn  
See page 38.  
G. B. Lewis Co., Watertown, Wis.  
Schwenk Safety Device Corp.,  
27 Water St., N.Y.  
C. T. Small Mfg. Co., 1204 Ferguson Ave.,  
St. Louis

**TOOTH PASTE**

Commercial Laboratories, Newark, N. Y. State



**TUBE FILLING MACHINERY (see FILLING MACHINERY, TUBES)****TUBES (Collapsible)**

Aluminum Company of America,  
Gulf Bldg., Pittsburgh, Pa.  
Art Tube Co., Irvington, N. J.  
Bond Manufacturing Co., Wilmington, Del.  
Consolidated Fruit Jar Co.,  
New Brunswick, N. J.  
**Continental Can Co., 100 E. 42nd St., N.Y.**  
See page 24.  
Globe Collapsible Tube Corp.,  
23 Columbia Heights, Bklyn., N.Y.  
Hygienic Tube Co., 34 Ave. L., Newark, N.J.  
(Celluloid)  
National Collapsible Tube Co.,  
Providence, R. I.  
New England Collapsible Tube Co.,  
New London, Conn.  
Peerless Tube Co., Bloomfield, N. J.  
Sun Tube Corp., Hillside, N. J.  
Victor Metal Products Corp., Bklyn., N.Y.  
White Metal Mfg. Co., 1012 Grand St.,  
Hoboken, N. J.  
A. H. Wirz, Inc., Chester, Pa.

**TUBES (Transparent Celluloid)**

Lusteroid Container Co., So. Orange, N.J.  
Hygienic Tube Co., Newark, N.J.

**TURPENTINE**

American Turpentine & Tar Co.,  
New Orleans, La.  
Antwerp Naval Stores Co., Savannah, Ga.  
General Naval Stores Co.,  
230 Park Ave., N.Y.  
Guignon & Green, 17 Battery Pl., N.Y.  
Hercules Powder Co., Wilmington, Del.  
National Turpentine Pwds. Co.,  
Gull Point, Fla.  
Taylor, Lowenstein & Co., Mobile, Ala.  
G. A. Wharry & Co., 24 State St., N.Y.

**URINAL BLOCKS (see DEODORIZING BLOCKS)****USED MACHINERY & EQUIPMENT**

Consolidated Products Co., 15 Park Row, N.Y.  
See page 23.  
First Machinery Co., 419 Lafayette St., N.Y.  
Houchin Machinery Co., Hawthorne, N.J.  
See page 37.  
Huber Machine Co., 259—46th St., Brooklyn,  
N.Y. See page 38.  
J. M. Lehmann Co., 250 West Broadway, N.Y.  
Machinery & Equipment Co.,  
225 Sherman Ave., Newark, N. J.  
Newmann Tallow & Soap Machinery Co.,  
1051 W. 35th St., Chicago See page 44.  
Stein-Brill Corp., 183 Varick St., N.Y.  
See page 63.

**VACUUM CLEANERS (Heavy Duty)**

Breuer Electric Mfg. Co., 852 Blackhawk St.,  
Chicago See page 20.  
Fay Co., Madison Ave., N.Y.

**VACUUM PUMPS (see PUMPS)****VALVES (Soap)**

Alloy Prods. Corp., 221 Madison St.,  
Waukesha, Wisc.  
American Car & Foundry Co.,  
30 Church St., N.Y.  
Foster Pump Works, Inc., 54 Washington St.,  
Brooklyn  
Imperial Brass Mfg. Co., 1200 W. Harrison St.,  
Chicago  
Palmer Products, Waukesha, Wis.  
U. S. Sanitary Specialties Corp.,  
435 S. Western Ave., Chicago

**VANILLIN***(see also Essential Oils)*

Fries Bros., 90 Reade St., N.Y.  
**Givaudan-Delawanna, Inc., 80—5th Ave., N.Y.**  
See inside front cover, 33.  
Maywood Chemical Co., Maywood, N.J.  
Monsanto Chemical Works, 1724 S. 2nd St.,  
St. Louis, Mo.  
Verona Chemical Co., Verona Ave.,  
Newark, N.J.

**VAPORIZERS (see SPRAYERS, STEAM)****VATS (see TANKS)****VENDING MACHINES**

Acme Cotton Products Co., 245—5th Ave., N.Y.  
(Sanitary Napkin)  
Brown Co., Portland, Me. (Soap and Paper  
Towel)  
Hospital Specialty Co., 41 Union Sq., N.Y.  
(Sanitary Napkin)  
Rochester Germicide Co., Rochester (Sanitary  
Napkin)

**VETIVERT OIL (see ESSENTIAL OILS)****VOLCANIC ASH**

Allied Industrial Prods. Co.,  
17 N. Elizabeth St., Chicago  
Goris & Arnstein, 37th & Racine Ave., Chicago  
K. F. Griffiths, 110 E. 42nd St., N.Y.  
Hammill & Gillespie, 225 Broadway, N.Y.  
Jas. H. Rhodes & Co., 157 W. Austin Ave.,  
Chicago  
Tamms Silica Co., 228 N. LaSalle St., Chicago  
Whitaker, Clark & Daniels, 245 Front St., N.Y.

**WASHING MACHINERY (Bottles)**

Barry-Wehmiller Machinery Co.,  
4660 W. Florissant Ave., St. Louis  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Karl Kiefer Machine Co., Cincinnati, O.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.

**WASHING MACHINERY (Bottles) (Cont'd)**

Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.  
F. J. Stokes Mach. Co., Philadelphia, Pa.  
U. S. Bottlers Machinery Co.,  
4025 N. Rockwell St., Chicago

**WASHING MACHINERY (Drums and Barrels)**

F. Aue & Co., 171 Beebe Ave.,  
Long Island City, N.Y.  
Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
Eureka Machine Co., 2061 Vega Ave.,  
Cleveland  
Charles E. Farrington, Phoenixville, Pa.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.  
Vol-U-Meter Co., 710 Ohio St., Buffalo

**WASHING POWDERS**

American Soap Powder Wks.,  
100 Van Dyke St., Brooklyn, N.Y.  
Armour Soap Wks., 1355 W. 31st St., Chicago  
See page 14.  
Columbia Soap & Chem. Co., Inc.,  
324 Leavenworth St., San Francisco  
Creco Co., Inc., Creco Bldg., Long Island City,  
N.Y.  
Du Bois Soap Co., Cincinnati, O.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Hewitt Soap Co., Dayton, O.  
Holman Soap Co., 3100 Fox St., Chicago, Ill.  
Hysan Prods. Co., 2560 Armitage Ave., Chicago  
H. Kohnstamm & Co., 91 Park Place, N.Y.  
Los Angeles Soap Co., Los Angeles, Calif.  
National Milling & Chem. Co.,  
Managunk, Philadelphia, Pa.  
North Coast Soap & Chem. Wks.,  
Seattle, Wash.  
Paper Makers Chemical Corp.,  
Kalamazoo, Mich.  
Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
Poland Soap Works, Anniston, Ala.  
Procter & Gamble Co., Cincinnati  
Solvay Sales Corp., 61 Broadway, N.Y.  
See pages 60, 61.  
Stevens Soap Corp., 200 Sullivan St., Brooklyn  
Swift & Co., Union Stock Yards, Chicago  
Victor Chemical Works, 141 W. Jackson Blvd.,  
Chicago  
Warren Soap Mfg. Co., 51 Waverly St.,  
Cambridge, Mass.

**WATER SOFTENERS**

Allied Industrial Prods. Co., 17 N. Elizabeth St.,  
Chicago  
Hysan Prods. Co., 2560 Armitage Ave., Chicago  
Jansen Soap & Chem. Co., 324 Leavenworth St.,  
San Francisco  
Permutit Co., 330 W. 42nd St., N.Y.  
Solvay Sales Corp., 61 Broadway, N.Y.  
See pages 60, 61.

**WATER STILLS (Automatic)**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.

Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)

Stein-Brill Corp., 183 Varick St., N.Y.  
(Used) See page 63.  
F. J. Stokes Machine Co., Tabor Rd.,  
Phila., Pa.

**WAX APPLICATORS**

American Standard Mfg. Co.,  
2509 Lime St., Chicago  
Federal Varnish Co., 333 S. Peoria St.,  
Chicago See page 29.  
Fuld Bros., 2308 Frederick Ave., Baltimore  
See page 31.  
Palmer Products, Inc., Waukesha, Wis.  
H. F. Staples Co., Medford, Mass.

**WAX, FLOOR, (see FLOOR WAX)****WAX POLISHES, (see POLISH, WAX)****WAXES (CARNAUBA, CANDELILLA,**

**MONTAN, ETC., do not confuse with  
floor wax)**

American Cyanamid & Chem. Corp.,  
30 Rockefeller Plaza, N.Y.  
Wm. Benkert & Co., 100 Gold St., N.Y.  
See page 19.  
E. A. Bromund Co., 256 Broadway, N.Y.  
T. G. Cooper & Co., 47 N. 2nd St., Phila.  
William H. Dey & Co., 11 Water St., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
General Dyestuff Corp., 230—5th Ave., N.Y.  
Otto A. C. Hagen Co., 929 Ledger Bldg., Phila.  
J. L. Hopkins & Co., 220 Broadway, N.Y.  
Innis, Speiden & Co., 117 Liberty St., N.Y.  
See page 40.  
Stanley Jordan & Co., 11 Water St., N.Y.  
W. & A. Leaman, 17 State St., N.Y.  
George H. Lincks, 123 Front St., N.Y.  
Muench-Kreuzer Candle Co., Syracuse, N.Y.  
Neumann-Buslee & Wolfe, 224 W. Huron St.,  
Chicago  
S. B. Penick & Co., 132 Nassau St., N.Y.  
R. F. Revson Co., 91—7th Ave., N.Y.  
Frank B. Ross Co., 79 Wall St., N.Y.  
E. M. Sergeant Pulp & Chemical Co.,  
350—5th Ave., N.Y.  
Sherwood Petroleum Co., Bush Terminal Bldg.,  
No. 1, Brooklyn, N.Y.  
Strohmeyer & Arpe, 139 Franklin St., N.Y.  
Smith-Weihman Co., 15 Moore St., N.Y.  
See page 59.  
Will & Baumer Candle Co., Syracuse, N.Y.

**WEIGHING EQUIPMENT (Automatic)**

Consolidated Prods. Co., 15 Park Row, N.Y.  
(Used) See page 23.  
J. L. Ferguson Co., Joliet, Ill.  
B. F. Gump Co., 431 S. Clinton St., Chicago  
S. Howes Co., Silver Creek, N.Y.  
Johnson Automatic Sealer Co., Ltd.,  
Battle Creek, Mich.  
Newman Tallow & Soap Machy. Co.,  
1051 W. 35th St., Chicago (Used)  
See page 44.  
Pneumatic Scale Corp., Norfolk Downs, Mass.  
See pages 48, 49.

**WEIGHING EQUIPMENT (Cont'd)**

- F. J. Stokes Machine Co., Phila., Pa.  
**Stokes & Smith Co., Summerdale, Phila.**  
 See page 64.  
 Triangle Package Machinery Co.,  
 910 Spaulding Ave., Chicago  
 Volumeter Co., 710 Ohio St., Buffalo, N.Y.

**WHALE OIL***(see also Brokers and Dealers)*

- Harvey & Outerbridge, 250 Park Ave., N.Y.  
 J. H. Redding Co., 17 Battery Pl., N.Y.  
 F. A. Marsily & Co., 25 Beaver St., N.Y.  
 Murray Oil Prods Co., 21 West St., N.Y.  
**Wilbur-Ellis Co., 17 Battery Pl., N.Y.**  
 See inside back cover.

**WHALE OIL SOAPS***(see also Fish Oil Soaps)*

- James Good, Inc., Kensington, Philadelphia**  
 See page 34.  
 Marshall Prods., Inc., 806 N. 1st St., St. Louis  
 National Oil Products Co., Harrison, N. J.  
 National Soap Co., Box 1613, Tacoma, Wash.  
 Newell, Gutradt Co., 350 Fremont St.,  
 San Francisco  
 North Coast Chemical & Soap Works,  
 Seattle, Wash.  
 Peck's Prods. Co., 522-40 N. 2nd St., St. Louis  
 Procter & Gamble Co., Cincinnati

**WHITE MINERAL OILS**

- A. C. Drury & Co., 219 East North Water St.,  
 Chicago  
 S. Schwabacher & Co., 59 Pearl St., N.Y.  
**L. Sonneborn Sons, 88 Lexington Ave., N.Y.**  
 See page 62.  
 Stanco, Inc., 2 Park Ave., N.Y.  
 Sherwood Petroleum Co., Bush Terminal Bldg.  
 No. 1, Brooklyn, N.Y.

**WHITING**

- American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
**Columbia Alkali Co., 350—5th Ave., N.Y.**  
 See page 22.  
 Stanley Doggett, Inc., 75 Varick St., N.Y.  
 Goris & Arnstein, 37th & Racine Ave., Chicago  
**Grasselli Chem. Co., 1300 Guardian Bldg.,**  
**Cleveland**  
 See page 35.  
 W. S. Gray Co., 342 Madison Ave., N.Y.  
 Hammill & Gillespie, 225 Broadway, N.Y.  
 Industrial Chem. Sales Co., Inc.,  
 230 Park Ave., N.Y.  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
 See page 40.  
 Pittsburgh Plate Glass Co., Milwaukee, Wis.  
 Reliance Whiting Co., Alton, Ill.  
 George A. Rowley Co., 119 N. Broad St., Phila.  
 E. M. Sergeant Pulp & Chemical Co.,  
 350—5th Ave., N.Y.  
 Geo. B. Smith Chem. Works, Springfield, Ill.  
 Wishnick-Tumpeer, Inc., 253 Front St., N.Y.

**WOOL GREASE**

- American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 Bopf-Whittam Corp., Westfield, N. J.  
 Durkee Famous Foods, Inc., 2670 Elston Ave.,  
 Chicago  
 Hummel Chemical Co., 90 West St., N.Y.  
 W. L. Jacobs, Sperry Bldg., Brooklyn, N.Y.  
 Jungmann & Co., 157 Chambers St., N.Y.  
 W. L. Montgomery & Co., 89 Beach St., Boston  
 Pfaltz & Bauer, Inc., 300 Pearl St., N.Y.

**WRAPPING MACHINERY (Cake Soaps)**

- Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. M. Lehmann Co., 250 West Broadway, N.Y.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Package Machinery Co., 132 Bernie Ave.,  
 Springfield, Mass.  
 F. B. Redington Co., 112 S. Sangamon St.,  
 Chicago  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.

**WRAPPING MACHINERY (Tight Wrapping)**

- Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Pneumatic Scale Corp., Norfolk Downs, Mass.  
 See pages 48, 49.  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.  
 Stokes & Smith Co., Summerdale, Phila.  
 See page 64.

**WRAPPING MACHINERY (Wax)**

- Consolidated Prods. Co., 15 Park Row, N.Y.**  
 (Used) See page 23.  
 J. L. Ferguson Co., Joilet, Ill.  
 Johnson Automatic Sealer Co., Ltd.,  
 Battle Creek, Mich.  
 J. M. Lehmann Co., 250 West Broadway, N.Y.  
**Newman Tallow & Soap Machy. Co.,**  
**1051 W. 35th St., Chicago (Used)**  
 See page 44.  
 Package Machinery Co., 132 Bernie Ave.,  
 Springfield, Mass.  
**Pneumatic Scale Corp., Norfolk Downs, Mass.**  
 Chicago See pages 48, 49.  
 F. B. Redington Co., 112 S. Sangamon St.,  
 Chicago  
**Stein-Brill Corp., 183 Varick St., N.Y.**  
 (Used) See page 63.

**YLANG YLANG OIL (see ESSENTIAL OILS)****ZINC OXIDE**

- American Cyanamid & Chem. Corp.,  
 30 Rockefeller Plaza, N.Y.  
 Anaconda Sales Co., E. Chicago, Ind.  
 J. T. Baker Chem. Co., Phillipsburg, N. J.

Chas. B. Chrystal Co., 11 Park Pl., N.Y.  
A. C. Drury & Co., 219 East North Water St.,  
Chicago  
Eagle-Picher Lead Co.,  
134 N. La Salle St., Chicago  
**Grasselli Chem. Co., 1300 Guardian Bldg.,  
Cleveland** See page 35.  
Harshaw Chem. Co., Cleveland  
**Innis, Speiden & Co., 117 Liberty St., N.Y.**  
See page 40.  
Jungmann & Co., 157 Chambers St., N.Y.  
Mallinckrodt Chemical Works, St. Louis, Mo.  
Merck & Co., Rahway, N.J.

New Jersey Zinc Co., 160 Front St., N.Y.  
Western Zinc Oxide Co., Leadville, Col.

**XYLENOL**

Barrett Co., 40 Rector St., N.Y.

See page 18.

Koppers Products Co., Koppers Bldg.,  
Pittsburgh, Pa.

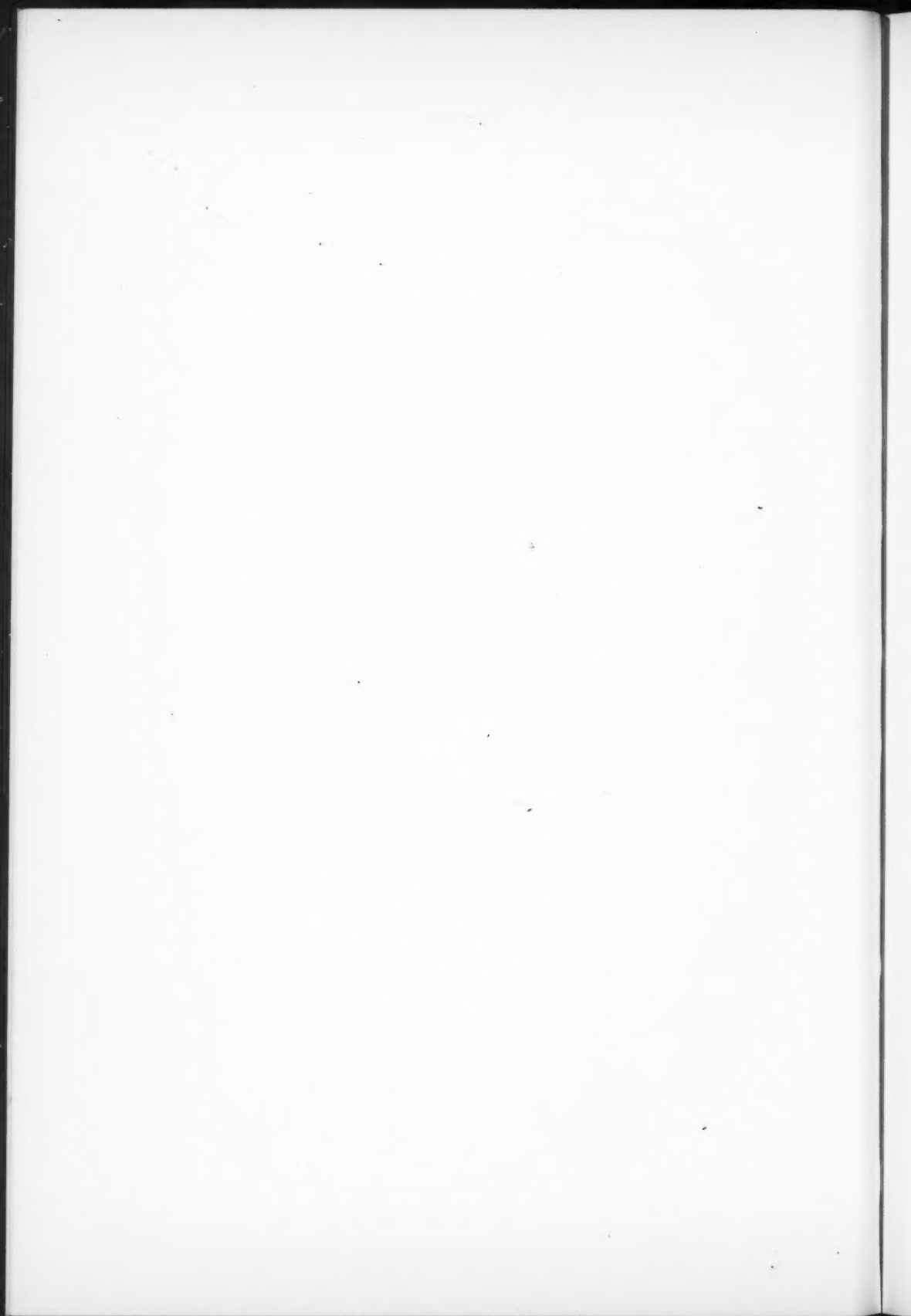
See page 41.

Reilly Tar & Chemical Corp., South Bend, Ind.  
See page 56.

**ZINC STEARATE (see STEARATES)**

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**Memoranda**





# Appendix



## BLUE BOOK and CATALOG for the Soap, Insecticide, Disinfectant and Allied Industries for 1935



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# How To Buy Sanitary Specialties

## What the Jobber or Janitor Supply House Should Look for and What He Should Avoid in Purchasing Bulk Sanitary Supplies

**A**S A preface to considering what a buyer of sanitary supplies *should* look for in purchasing these products, stop for a minute to ask what he *does* look for. The answer, far too often we are afraid,—is the lowest price. A lesson which seems very hard to learn is that the buyer who insists upon buying at the lowest price gets, in nine cases out of ten, products which are distinctly inferior. By giving his business always to the lowest bidder, he finds in the end that he is far too often doing business with the lowest fringe of the supply trade, for it is obvious that the manufacturer of honest merchandise cannot compete on price terms with the cheapest of his cut-price competitors. There are times, of course, when a cheap product is desired for a particular purpose, and then price considerations must rule. To buy all supplies, however, at all times, on a basis of price alone, is to run the risk of getting products which are expensive to handle at any price. Poorly made goods may even damage property in addition to failing in their task. Fooling with cheap, poorly-made untested products has lost many a profitable account.

### **Powdered Soaps, Soap Powders, Scouring Powders**

As powdered soaps are some times confused with soap powders, it might be well to draw a line of distinction between the two. Powdered Soaps consist almost entirely of pure soap of very low moisture content ground to a powder. Because they are pure soap, naturally they are priced higher than soap powder compounds. They are used principally in the cleansing and finishing of textiles and fine fabrics and in those situations where mild, yet highly active detergents are indicated. They are sometimes used (in solution) in the cleansing of fine wood finishes in offices and hotels, though in such cases soap chips are perhaps to be preferred because of the ease in handling and soluble qualities. Powdered soaps go principally into tooth paste and powder, powdered hand soaps, toilet articles, and other products used chiefly on the human body.

These detailed suggestions on points to watch in the purchase of soaps and sanitary specialties have been compiled from a series of articles prepared by a group of recognized experts in their particular fields. The publishers wish to express their indebtedness to the following men for their willingness to assist in the preparation of this material:  
L. B. Schwarcz, Clifton Chemical Co.;  
C. C. Baird, Baird & McGuire, Inc.;  
Henry Nelson, Chemical Supply Co.;  
Joseph Fuld, Fuld Bros., Inc.; E. S. Pattison, Mathieson Alkali Works;  
D. J. O'Sullivan, Armour & Co., and  
T. V. DuBois, DuBois Soap Co.

Soap Powders are suggested for what may be classified as "rough work"; the cleansing of wood floors, tile, machinery, etc. Soap powders usually consist of a small percentage of pure soap, at least 10%, seldom more than 20%. To the powdered (anhydrous) soap are added various alkalies such as trisodium phosphate, sodium carbonate (soda ash) and borax. The effect of these alkalies and other similar ones is to cut and loosen grease and dirt. They also act as water softeners.

Just how much soap and how much alkali a soap powder should contain is a moot question, but it should always be remembered that soap itself is the most costly ingredient, and the higher percentage of soap contained in powder, the higher the cost of manufacture. However, as stated above, a good soap powder for general purposes need not contain more than 20% pure soap. Anything less than 10% of soap reduces sudsing and detergent value and places the full burden of cleansing on the alkalies contained in the powder.

Scouring Powders (Cleansers) are compounds of powdered soap, mineral abrasive and sodium carbonate. Mineral abrasives used are volcanic ash, which is a form of rock composed of finely powdered, light, porous, siliceous material, powdered silica, feldspar and other minute sharp-face minerals. The abrasive used

most generally is volcanic ash. The activity of any scouring powder depends on the type and coarseness of the abrasive used. This varies between abrasive powders that must pass through a number 200 mesh down to those passing through number 60 mesh screens. Cleansing action is increased by the addition of a small amount of alkali, usually sodium carbonate, which serves to loosen and cut grease and dirt.

The ideal scouring powder should contain approximately 90% abrasive which should be coarse enough, have enough "teeth," to pick up dirt, yet still be fine and soft enough not to scratch ordinary surfaces. A good scouring powder should be dry and free flowing, should not contain more than 5% moisture. If it contains more than 5% moisture, it will likely become lumpy and hard to handle. The purchaser should always insist on dry powder and free flowing qualities.

Scouring powders are low-price items, and it therefore becomes important to realize that there are wide differences between them. Fairly wide differences in price are therefore perfectly understandable. Indeed, in many cases, the higher priced product will prove both the better and the more economical in the end.

Right here is where the seller's standing enters. Certain scouring powders have established the right to the respect of every buyer. They are well made, they are uniform from barrel to barrel, and they claim to be only what they really are,—not universal cleansers, but good, serviceable scouring powders. Nearly every buyer is acquainted with at least one of these powders. It is well to be very cautious about using new and unheard of scouring powders without careful practical tests. Buy from a reliable maker, observe the work which the powder does, as compared with whatever you may have used before and as compared with the statements that the salesman may have made when you placed the order. It is frequently wise to pay a little more per pound if it will give you a powder which does your work better, more safely, or at a lower cost per cleaning. But don't pay such higher price until you are convinced that the powder is really doing this better job for you.

### Liquid Soap

It has usually been a common practice to judge liquid soap solely on the basis of anhydrous content. However, it is easy to be misguided by following this procedure, as the anhydrous content is only one part of the picture, and there are other very important features of a liquid soap that should be investigated before trying to make final judgment as to quality.

As a comparison, it would be just as unwise to purchase a diamond exclusively on the basis of carat weight. One two-carat stone may be worth a few hundred dollars and another weighing the same may cost several thousand dollars, due to shape, cut, flawlessness, etc. A similar analogy could be applied to any number of other products with the same result, viz:—That the worth of an item can rarely be judged by one single yardstick.

Even if liquid soap is purchased according to U. S. Government or some other specification, one is not always assured of getting a strictly high quality soap, as there are loopholes which are not covered. For instance, most specifications call for pure vegetable oil and in some cases specify a coconut oil soap made with potash or potash and soda. However, the grade of coconut oil is seldom, if ever, mentioned, and as a result, Manila, Ceylon, fatty acids or other cheap oils may be used, all of which are less desirable than pure Cochin coconut oil.

Then again although a liquid soap may pass the laboratory test in regard to leaving no objectionable odor on the skin *at the time of testing*, it often occurs that a poorly made soap develops a rancid and in some cases a nauseous medicinal odor. This is due to the fact that some commercial caustic potash contains small amounts of potassium chlorate and other salts, which under certain conditions react on the caproic, capric and butyric acids in the coconut oil to form other acids such as crotonic and acrylic, which cause the unpleasant odor referred to. Unless the soapmaker knows through long experience, how to take care of this condition, the undesirable odors may develop.

In most specifications, a potash, or potash and soda soap is permitted, with a result that when there is a sufficient variation in price between these two caustics, too much of the latter may be used, which makes a soap that tends to thicken and become unduly cloudy, especially if the minimum free alkali is lacking.

Fine cooking and expert soap making are very much akin. Two cooks can use exactly the same ingredients and one of them will turn out a tasty dish that will delight the palate of an epicure, whereas another cook using identically the same ingredients will evolve a concoction at which a cat would turn up his nose. There is a good deal of good old fashioned cookery in being able to turn out a high quality liquid soap. The fine points in the ability to manufacture a quality soap are not learned in a day or year, or are they gleaned from books. Some old time liquid soap makers guard their methods and secrets jealously.

A few makers of the outstanding quality liquid soap allow it to age in cypress tanks for some time. For reasons not completely explainable by chemistry, liquid soap like fine whiskey and old violins improve with age. Aged liquid soap is softer, more gentle, and smoother.

Let us try to ascertain what other characteristics constitute an outstanding liquid soap. As anhydrous content was previously mentioned, it may be well to dwell on this before proceeding further. A 15% to 20% soap content usually gives good satisfaction. An inadequate concentration such as 8%, 10% or 12%, as a rule will not give sufficient lather under ordinary conditions and as a result the user is apt to overcorrect the poor sudsing qualities of the soap by working the dispenser considerably more times than necessary. Therefore the theoretical saving of using a low strength liquid soap is usually more than offset by the larger quantity of soap used.

On the other hand a soap of 22% or 25% content or higher is not recommended, as it has a tendency to leave the hands greasy if not thoroughly rinsed off. Then again the thicker the soap is, the more likely it is to clog the dispensers. Jobbers as a rule should not recommend a 40% soap to their customers, unless they feel assured that it will be accurately mixed with water before the dispensers are filled. Porters are notoriously inept even in plain arithmetic. For instance, one concern with branches all over the country, buys a 40% concentrated soap. On a check up of the diluted liquid soap that was actually contained in the various dispensers, it was found that the concentration ranged from 8% all the way up to 40%, — even though all dilution instructions were exactly the same! In one case the porter forgot the water, and in the other he all but forgot the soap.

It is satisfactory for the jobber to utilize base and concentrated soap if he has the time and facilities for reducing them to the proper concentration. Many, however, prefer to buy the finished product from the manufacturer. Though it may cost a trifle more, it is often worth it.

There is probably no one "best" liquid soap, as the proper type depends entirely upon the particular purpose for which it is to be used. For public places, where the cost is the main factor, a pure coconut oil soap may be used, as this type gives the maximum lather. In offices, or where there are a large number of girls employed, it is sometimes preferable to supply a soap made from a mixture of coconut and olive, or other bland oil, as a straight coconut oil product has a tendency to roughen some delicate skins. Such complaints are more apt to occur in winter. In many cases the soap

may not be at fault, due to the fact that plain water or even cold weather alone may cause chapping, and the blame is erroneously placed on the soap. In factories where the workers get a lot of grease and dirt on their hands, an ordinary coconut oil liquid soap may not cut the grease fast enough and the addition of a percentage of a mild detergent is helpful.

In general, the higher the olive oil content, the softer the liquid soap. On the other hand a pure olive oil soap gives a sparse lather unless highly concentrated. The concentrated type on the other hand will tend to gum up the ordinary soap dispenser. However, in hospital maternity wards special dispensers are used and a pure concentrated olive oil soap works satisfactorily.

In the foregoing discussion we have tried to emphasize that materials and soap strength alone are not all-sufficient. It is important, of course, to know what type soap you are getting and in exactly what concentration. There are other quality factors of paramount importance also, however, which depend on experience, skill, equipment and integrity of your supplier.

### Deodorizing Blocks

With an almost endless number of brands of paradichlorobenzene products on the market, all designed for deodorization, moth control and other sanitary uses, the jobber is very frequently puzzled as to which brand or brands to handle because he does not always know what constitutes a genuinely first-class article. With all kinds of blocks, cakes and crystals available, some good and some not so good, his uncertainty may urge him to buy the cheapest and in this, he frequently makes a grave error.

The first requisite of a strictly high-grade para block is that it shall be made solely from pure paradichlorobenzene. Admixtures of other products, such as naphthalene and inert fillers in a para block reduce its quality and are primarily to cheapen the block. Naphthalene blocks and crystals unquestionably have their place in the sanitary products field, especially in moth control, but the addition of naphthalene to paradichlorobenzene blocks is distinctly not good practice.

The addition of naphthalene or useless fillers such as talc, salt, or other cheap crystalline or powdered material, is rather easily detected by examining the block after it has been in contact with the air for a week or so. If naphthalene is present, the surface will be pitted as the naphthalene has a slower rate of evaporation than the para. If an inert powder or other filler has been added, this will begin to deposit on the surface around the block after it has started to gasify. A pure para block correctly manufac-



tured will evaporate evenly without pitting or leaving any residue behind.

Another factor which is important to the jobber who handles para products, is the appearance of the block and the relation of this to its quality and price. Good para blocks should have an even density, and a smooth, even surface. The best blocks are made in various types of presses from cold para crystals. The greater the pressure, the better the block is ordinarily. A well-pressed block should be dense and heavy for its size. A poorly pressed block may look large and look like a lot for the money, but it is probably light in weight and contains less para than the good block. Therefore, size in the block may misguide the buyer unless he knows what it means. Weight is the proper basis on which to judge value. Furthermore, a light loosely packed block will evaporate too rapidly, too unevenly, and will crumble and fall apart.

The earliest procedure in the manufacture of blocks was to melt up the paradichlorbenzene crystals and then pour the highly volatile liquid into molds to cool and harden. The chief advantage of this method is that the cost of equipment is extremely small. The loss of para by evaporation while hot, which runs up to 25 per cent, and the loss of perfume added to the hot liquid, which runs up to 60 per cent in some cases, is highly wasteful. Furthermore, air pockets are likely to form and the inside of such blocks are frequently crumbly and brittle. It is also almost impossible to secure uniform blocks. This type of block does not give great satisfaction to users.

The economical method for making small blocks is by use of the machine or foot press. This is for the three and four ounce sizes. Although the foot-press blocks are not as well pressed as a machine-pressed block, they are superior to the molded blocks. Of course, it is impossible to make the 1½ and 2½ pound sizes on a foot-press. The pressure needed to press these large blocks runs well into the tons and it must be secured by especially built automatic presses or hydraulic presses. The latest development in this field is the powerful electric automatic presses which give a pressure of from 60 to 100 tons, and will turn out 25 to 60 blocks per minute. These blocks can be recognized by their firmness, density, uniformity, and their long-lasting qualities when used.

In selecting blocks, care should be taken that the perfume is of the correct type or it will not be satisfactory. Some perfumes last only during a very short period of the life of the block. Sometimes they are used in too great a quantity and make the outside of the block wet and greasy. The same thing may occur where the

wrong kind of perfume material is used. This "sweating" not only makes the block greasy to handle, but will cause running and may streak walls as well as making the container very messy. The perfume used with para should have approximately the same rate of evaporation as the block itself and should last until the last few crystals with a uniform intensity of odor. If the block has no perfume when the para is half or nearly all evaporated, it is evidence that the wrong type perfume has been used.

In the matter of coloring para blocks, it may be said that the tendency of late has been toward using more plain white blocks. The possibility of staining and of the color residue being left in holders has accounted for this. However, where the three and four ounce cakes are to be used exclusively for urinal deodorization, color adds to the appearance and may "match" the odor. However, in general, tinted blocks are not recommended for moth control work or where they are used in wall holders.

It has been said that the best blocks are made from pure paradichlorbenzene. Of course, blocks made wholly from naphthalene are available and also serve a definite purpose. They are considerably cheaper than para blocks owing to the fact that naphthalene sells for less than half of the price of paradichlorbenzene. Where a cheap product must be furnished, naphthalene blocks offer a suitable substitute for para blocks. The naphthalene evaporates less rapidly than para, its odor is not as intense, and it does not cover other odors as well for this reason. For moth control work, naphthalene and para are held on approximately an equal plane by the Department of Agriculture.

### Coal-Tar Disinfectants

An important feature of coal-tar disinfectants is that their strength or power to kill harmful disease bacteria may be accurately determined. As a result of this determination the consumer may know exactly how to dilute the fluid and apply it for specific purposes. Disinfectants made from coal-tar are available in strengths ranging from two to twenty times that of pure carbolic acid. They mix freely with water to form emulsions and are suitable for application in the form of washing, mopping or scrubbing solutions.

In buying a coal-tar disinfectant in ordinary quantities the buyer should insist upon having from the manufacturer a written statement of the bacteriological strength (phenol coefficient) of the disinfectant supplied. This should agree identically with the statement on the container. In buying large quantities, a certified copy of the bacteriological test should be supplied by

the seller. This test sheet shows the actual phenol coefficient against the germ of typhoid fever. The test method used today is that of the Food and Drug Administration of the U. S. Department of Agriculture, and supersedes the Rideal-Walker and Hygienic Laboratory tests which were formerly in use. In addition to the test sheet, the manufacturer should declare the phenol coefficient on the container, as well as on the invoice. This is for the buyer's protection. If such statements are not made, the responsibility for the strength and quality of the product is shifted from the manufacturer to the buyer. The Code of the Disinfectant Manufacturing Industry specifies the use of the Department of Agriculture test, which is called FDA for short, and the Federal Law requires that the name and percentage of inert ingredients shall also appear on the label or container. These are simple but important things to look for.

Coal-tar disinfectants contain water, usually not over 10%. As water is without germ killing power, it has to be listed as an inert ingredient, both by name and percentage. Disinfectants with an excessive amount of water should be avoided, as well as those which contain such adulterants as mineral oil (kerosene). The important factor of course is the phenol coefficient, for that is the true index of the worth of the product. Buyers should *demand* it, not only on containers shipped to them but on invoices too.

When coal-tar disinfectants are properly manufactured they should be free from sediment and the emulsions should not show any separation of oil when diluted with water, that is oily drops floating on top. The odor should be characteristic of tar and suggest cleanliness. The correct amount of water to use in preparing solutions for general use is arrived at by multiplying the coefficient by twenty. Thus a disinfectant with a coefficient of six should be diluted with 120 parts of water, and one with a coefficient of twenty with 400 parts of water. It is obvious that the higher the coefficient, the greater the amount of water to be used. Disinfectants with phenol coefficients of 20, when diluted for use, cost on the average less than a cent a gallon.

Cresol compounds are disinfectants of the so-called soluble type. They are prepared from coal-tar and are excellent germicides. Two grades are available; one meeting the specifications of the U. S. Pharmacopoeia and known as *Liquor Cresolis Compositus*, U. S. P., and the other which is sold as technical or commercial cresol compound. These disinfectants are largely used by hospitals, veterinarians and surgeons. As they are clear in solution, operating instruments immersed in a bath of the fluid may be

clearly seen. The phenol coefficient of the U. S. P. compound varies between 3 and  $3\frac{1}{2}$ , while the technical or commercial grade has a coefficient of around four. The odor of cresol compounds is suggestive of that of cresol or cresylic acid. Cresol compounds, meeting the specifications of the Bureau of Animal Industry, U. S. Department of Agriculture, are used in disinfecting premises which have contained diseased cattle.

### Pine Oil Disinfectants

The problem of choosing between the many brands of pine oil disinfectant, offered at so many different prices, is aggravated by the fact that the quality of the disinfectant really cannot be determined except by a bacteriological test, and few buyers have the facilities necessary to make such a test. Nevertheless, there are ways by which the buyer can protect himself and make sure that the pine oil disinfectant offered him is the grade he wishes to handle. To begin with, the Department of Agriculture specifies that a pure pine oil disinfectant shall be made only from pine oil, soap, and water. Consequently, a product that contains hydrocarbon oil (kerosene) cannot be legally sold as a "pine oil disinfectant". Such a product, to be within the law, must be sold under a different name, and the seller is required to make specific mention on his label of the percentage of hydrocarbon oil in his product, and to declare it as "inert matter", since hydrocarbon oil does not possess disinfectant qualities.

Reputable manufacturers of pine oil disinfectants are always willing to give a certified analysis, and this, when given in writing, is the best assurance a buyer can have, provided he knows what to ask for. A dependable pine oil disinfectant, when made with rosin, should contain approximately 70% steam distilled pine oil, 21% rosin soap, with inert matter (water) of not over 9%. Pure pine oil disinfectants can also be made with vegetable oil soaps, instead of rosin soaps. In that case the percentage of soap may be as low as 9% and the water as much as 21%. Since water has no disinfectant value, it must always be declared on the label as "inert matter".

Another thing to look for when buying pine oil disinfectant, is a statement of efficiency, which indicates germ killing strength. The Government requires that this appear on all packages. Pine oil disinfectant is usually offered with a efficiency of either 3 or 4, and the difference in the wholesale price between these two grades is about five cents per gallon.

Do not be misled by the color of the disinfectant. Some sellers would have you believe that color determines the efficiency and germicidal quality of the disinfectant. That is an erroneous



belief. Pure pine oil disinfectants, made with rosin soap, often are darker in color than those made with vegetable oil soaps, yet the efficiency of both commercial grades is practically the same.

There are pine oil disinfectants on the market made with destructive distilled pine oil instead of steam distilled pine oil. The former have a rather pungent odor and are cheaper than those made with genuine steam distilled pine oil. There are also pine oil disinfectants which are made with pine oil of inferior quality. Naturally, these, too, can be offered at lower prices than the dependable grades which are made with pine oil of predetermined specifications.

It is thus readily apparent that pine oil disinfectants may be had in different qualities and at many varying prices. The safe course to follow, obviously, is to insist that your supplier furnish you with disinfectants of proven quality. Ask him to give you in writing:

1. A certified analysis showing percentages of pine oil, soap, and water.

2. A guarantee that the disinfectant is made from steam distilled pine oil according to specifications by the leading producers.

3. A guaranteed efficiency appearing on every package. This efficiency should be either 3 or 4 by the F. D. A. Method. (Food and Drug Administration Method.)

4. Proof of his business standing—which after all is your ultimate guarantee of his dependability.

### Chlorine Disinfectants

There is no perfect disinfectant for every purpose, any more than there is a single perfect detergent. Thus the user of disinfectants should be careful to weigh the advantages and disadvantages of various type products for the purpose which he has in mind. A dependable chlorine disinfectant, for example, while unsuitable for some purposes, has other fields of usefulness for which other disinfectants, such as phenol and its derivatives, are clearly unsuitable. On food-handling equipment, for instance, a sodium hypochlorite solution provides the following advantages:

1. It is non-poisonous in concentrations of high germicidal efficiency.

2. It is colorless, leaving no stain or other objectionable residue (on the contrary, it acts as a stain remover).

3. After it has done its work, its only decomposition product is sodium chloride (common salt).

4. It acts as a deodorant as well as a disinfectant, the chlorine odor disappearing rapidly after use.

5. It has the approval of health authorities

for use in food-handling establishments.

6. It is inexpensive enough to permit frequent use on all surfaces subject to bacterial contamination.

7. It kills bacteria rapidly and effectively.

In some cases, confusion has arisen from the attempt to express the germicidal effectiveness of chlorine disinfectants in terms of the "phenol coefficient". As the U. S. Department of Agriculture has pointed out, under certain conditions a chlorine disinfectant such as sodium hypochlorite is many times more powerful than phenol. Under other conditions, such as in the presence of an excess of organic matter, it may be less effective. As a means of comparing germicidal efficiency in practice "phenol coefficient" is meaningless when applied to chlorine solutions.

In the effort to make practical utilization of the germicidal power of chlorine, the following general types of products have been developed:

1. Chlorinated lime

2. Liquid sodium hypochlorite solutions

3. Chloramine products

4. Alkaline powders, primarily detergents, containing a small percentage of "available chlorine"

5. True calcium hypochlorite powder

6. Powder yielding sodium hypochlorite solutions when added to water

In solution, all of these products are "oxidizing agents", and act upon bacteria as a result of this oxidizing ability. With the exception of the chloramine products, *hypochlorite ions* ( $\text{OCl}^-$ ) formed in solution provide this oxidizing power. The capacity of these products to do an oxidizing job is commonly expressed as "available chlorine", which is simply the ratio of their oxidizing capacity to that of pure chlorine itself.

As disinfecting solutions are usually made up with some fixed concentration of available chlorine (100 p.p.m. = 100 parts available chlorine to 1,000,000 parts of solution), the available chlorine of any product is a rough measure of its value as a disinfectant. Taken in comparison with the weight and cost of a product, it gives the first rough basis for comparison.

The fact that two solutions are made up to contain the same amount of available chlorine, however, should not be taken to mean that they are equally effective in destroying bacteria. "Available chlorine" is simply a measure of the *oxidizing capacity* of a product. Now two tanks of water may have the same *capacity*, but other factors may make it easier to get water out of one than out of the other. Similarly, two solutions may be prepared containing the same available chlorine, but a more rapid release of this oxidizing capacity may make one of them decidedly

superior in germicidal speed and effectiveness.

"Well why not pick the product that acts the quickest and let it go at that?" you may ask. But the answer, unfortunately, is not so simple as that. As a matter of fact, perhaps the most important question of all that must be asked when choosing a chlorine disinfectant is this: "Is it stable and uniform?" No matter what other properties a product may have, it will appeal to few users if they cannot be sure of its action at the time and place it is most needed. It is this lack of stability and uniformity that have always been the chief drawbacks of chlorinated lime and old fashioned liquid sources of hypochlorite.

True calcium hypochlorite, however, is a powder which retains its strength both in dry form and in solution. With this product, it is possible to prepare calcium or sodium hypochlorite solutions of definite concentration and germicidal effectiveness.

The use of chlorine disinfectants is somewhat limited, of course, by their tendency to corrode. On glass-lined tanks, stainless steel, or non-metallic equipment, they can be used without fear, but on tinned iron, tinned copper, nickel and other surfaces, some modification of the solution is necessary to protect against corrosion. As the alkalinity of the solution is raised, its corrosive tendency is decreased. However, the rate of germicidal action also falls, so that a longer period of contact is required. In every case, however, a satisfactory balance can be obtained. For safe and practical general use, a prepared hypochlorite is desirable; one with an alkaline balance sufficiently high to reduce the corrosion hazard, while leaving the germicidal speed as rapid as conditions of use require.

### Metal Polish

There are five types of metal polish, each of which has recognized advantages and disadvantages for certain different types of work. The ideal polish (if one existed), would necessarily have the good qualities of all five types and none of the bad. Since no one polish can do everything equally well, two or more metal polishes are generally needed. And many building superintendents find an advantage in having paste polishes, powdered polishes and several different liquid polishes. Metal polishes are generally divided into five types:

1. Water Base
2. Petroleum Base

3. Petroleum Base (non-inflammable)
4. Paste
5. Powder

There is no way to judge the quality of a polish except by comparative test, but even such tests are often misleading unless one is comparing polishes of similar type upon identical jobs. Polishes depend upon the combined action of chemicals and abrasives. While it is impossible here to go into all of the peculiarities of each ingredient used in polishes, it may be said generally that the more solid the polish, the more it requires rubbing. And the more liquid it is, the more it depends upon chemical action. There are, however, some exceptions to this general statement.

The results which usually interest polish buyers are (1) Depth of luster; (2) Speed in application; (3) Ease in removing; (4) Lasting quality of luster; (5) Adaptability for special surfaces (rough and hot). Below is a table arranged to show how the different types of polish compare on the basis of the above points.

TYPE	Speed in Applying	Depth of Luster	Ease in Re- moving	Lasting Luster	Adaptability for Special Surfaces rough hot
Water Base	A	C	C	C	C
Petroleum Non-In- flammable	B	A	A	A	D
Petroleum	C	B	A	B	D
Paste	D	C	D	B	A
Powder	D	D	C	B	B

A—Excellent B—Good C—Fair D—Poor X—Unsuitable

There are other commonsense considerations which should be kept in mind when choosing or recommending metal polishes. They are: *Sliminess, stickiness or gumminess* in polishes usually indicate presence of a film around the abrasive particles which retards their polishing action.

*Very thin polishes* are usually wasteful.

*Inflammable polishes* are always a fire hazard. *Strong smelling polishes* are usually objectionable for indoor use.

*Free acid* in polishes usually causes speedy re-corrosion, and may also pit or etch metals.

*Caking* of polishes is usually wasteful of both time and the polish.

*Harsh abrasives* in polishes may scratch soft metals. They often ruin nickle.

*Poisonous ingredients* in polishes are always objectionable around foods and children.

*Excess alkali* in polishes frequently injures the nails and skin of users.



# Soap Plant Design

By W. E. WILKINSON

THE design of the small and medium-size soap plant is quite well standardized based on the operations which are conducted in every plant. Convenience and efficiency in handling materials are of prime importance and dictate the general arrangement of equipment. While the lay-out given in the accompanying diagram may seem of pretentious proportions, it can be adhered to in a plant with one-fifth the capacity of this particular one. The plant described here is capable of saponifying between twelve and thirteen million pounds of fats per year, or any mixture of fats, rosin, etc., and yielding and handling approximately twenty million pounds of neat kettle soap.

The kettles, of which there are four, 16-ft. diameter by 30 ft. deep, with a 6-ft. cone-shaped bottom, will each hold 248,000 lbs. of soap. This amount less nigre will give 198,000 lbs. of neat soap boiling capacity, made on each new batch, built on the iron, or a clean bottom. On the first batch the fats and rosin used would be 165,300 lbs. and the yield produced would be 248,000 lbs. This less, or allowing 20 per cent for nigre soap will give 198,000 lbs. of neat soap. To replace the material for the second batch built on the nigre of 49,600 lbs., stock and rosin required would be 132,266 lbs. and would yield and replace the 198,400 lbs. taken off the first batch.

Therefore, the stock and rosin for each new batch would be 165,300 lbs., this amount multiplied by four kettles would be 661,200 lbs. on the first run of the four kettles; 132,266 lbs. of stock and rosin for the second run, built on nigres. The stock used for the first month would be 661,200 plus 529,064, or 1,190,264 lbs. of stock and rosin for the first month, yielding 1,785,396 lbs. of neat soap.

The charge of fats and rosin built on nigres, would be at the rate of 1,058,128 lbs. on four kettles of two kettles each month, in eleven months this will be 11,639,408 lbs. This plus the stock and rosin used the first month on the iron, would total 12,829,672 lbs. with a yield of 19,244,508 lbs. of neat kettle soap per year. Should this amount of kettle soap be filled with say 20 per cent of fillers, this addi-

tion of fillings would produce a total of 24,055,000 lbs. of filled soap. If we want to use a 25 per cent of the kettle capacity for white base, the neat soap yield would be the same.

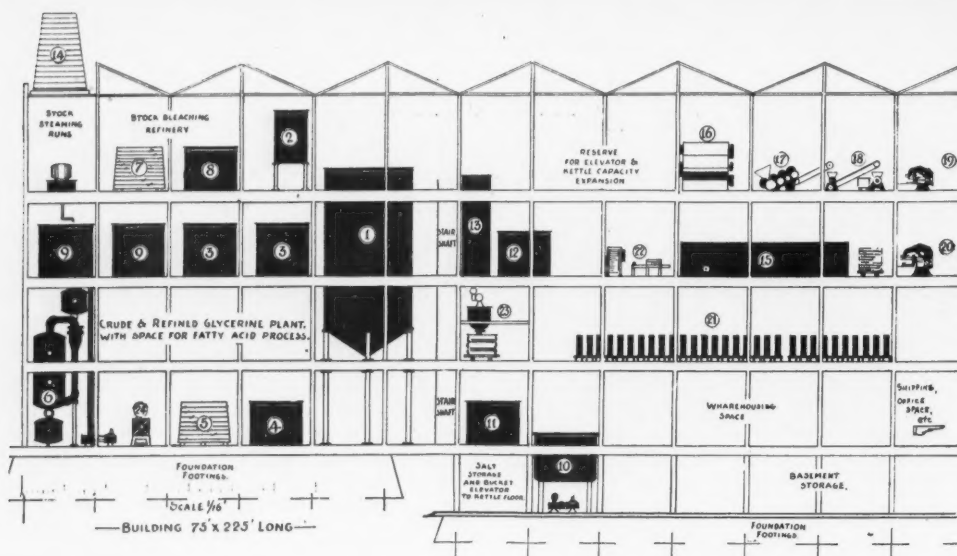
This white base could be filled also for white laundry bar soap, or could be used for laundry chip and the same base mixed with a good percentage of sal soda, the mixture being liquid enough to pump through the atomizer, or crystallized on chilled rollers, would make a translucent washing powder, not forgetting the possibilities of making a low cost toilet soap out of the same batch.

This being the capacity of the plant, all other equipment must be proportioned to handle the production when needed.

The next step is to take off a kettle of 200,000 lbs. available neat soap. The crutcher capacity should be 24,000 lbs. of kettle soap per hour. Therefore, eight crutchers will be required to do the work of taking off three frames each per hour, or 24 frames per hour for eight crutchers. This soap with 20 per cent of fillings, or 250 lbs. to each frame of soap will total 6,000 lbs. of fillings for the 24 frames. Add this to the kettle soap and there are 30,000 lbs. of filled soap in 24 frames of 1,250 lbs. each, figuring 1,000-1,006 lbs. of neat soap to the frame.

Regarding frame capacity, I would advocate the regular 1,250 lb. capacity type, for the fact this is considered a two man size, and is easily handled, larger sizes of 1,500 lbs. or 2,000 lbs. require three or four men, and should the floor be rough the soap is apt to slop over. Shaking is also apt to cause leaky frames, especially when old frames are used.

At the rate of 24,000 lbs. of kettle soap per hour, each kettle will consume 8-9 hours before reaching nigre. In summer weather, this speed will be impossible on account of the mass being too hot, and will probably take nearly twice this length of time. However, this will not retard capacity as already mentioned of eight kettles per month, this being ample time for large kettles to cool. And with modern crutchers, jacketed and equipped with facilities for water cooling, the soap can easily be chilled to 130-147° Fahrenheit, which is the usual temperature for most soaps ready to be framed.



- 1—Four Soap Kettles.
- 2—Four Lye Tanks.
- 3—Eight Stock Tanks.
- 4—Six Waste Lye Tanks.
- 5—Two Glycerine Treating Tanks.
- 6—Crude Glycerine Plant.
- 7—Two Washing Vats.
- 8—Two Stock Settling Tanks.
- 9—Two Stock Separatory Tanks.
- 10—Two Cast Iron Caustic Dumping Tanks.
- 11—Two Caustic Soda Storage Tanks.
- 12—Three Tanks—One Silicate of Soda, One Sal Soda, One Soap Stock Oil.

- 13—Two Remelters.
- 14—Water Cooling Tower, Glycerine Plant.
- 15—Filtered Air Drying Tunnels.
- 16—Dryer & Chipper for Toilet Soaps.
- 17—Amalgamators & Toilet Soap Mills.
- 18—Primary and Finishing Plodders.
- 19—Pressing and Wrapping.
- 20—Pressing and Wrapping.
- 21—Framing and Stripping.
- 22—Slabbing and Cutting.
- 23—Eight 1,500-lb. Soap Crutchers.
- 24—Two Filters, 36" 30 Plates and Frames.

The scrap soap remelter is the most profitable investment to the soap maker, big or little. This remelter unit will remelt all the clean scrap without causing loss in fillings and possibly only a slight loss of perfume, which would be the case if the scrap was thrown back into the kettle. The remelter might lose some of the moisture, but this can again be replaced in the crutcher by the addition of water. Some soap makers in taking off soap, will use half remelted soap with half new kettle soap, using of course only half the required amount of filler.

Any and all soaps can be remelted without any apparent detriment. The writer's experience with remelted white floating soap, using half new kettle soap, has been very satisfactory. If the remelter is properly constructed and 14 ft. by 16 ft. high, the results are 100 per cent better, for it is not only the heat of the closed steam coils that denote melting capacity, but the weight of soap scrap on the coils forcing down through the opening into the crutcher, and

the resultant soft soap will not even lose its perfume if forced out by the weight of four or five tons of soap scrap behind it.

The filtered air dryer marked on the sketch No. 15, while not a new idea is one of the most satisfactory systems where capacity is required. This is a tunnel arrangement and will rapidly dry any bar soap. Some of these dryers have as many as 12-17 tunnels usually built of sheet steel, and some of light concrete construction, sides, partitions and roof being of this material. The filtered air passes through the tunnels from cast iron registers on the floors and at the end of each tunnel, with suitable ventilators placed on the roofs of each tunnel on the opposite end. The heating system is a large high speed fan, which sucks air through a fine wire gauze and then over numerous steam heated coils, the fan pushing the heated air through a conduit under the floor to the tunnels. The fan should be the two way type and reversible, so the gauze screening can be cleaned when necessary with the fan

in reverse, thus blowing the dust off the screen.

The tank marked No. 10 is a cast iron caustic dumping tank, made up from three castings, the bottom being a one piece casting, equipped with a center C. I. column, which supports heavy C. I. triangular grates, the small ends of the grates rest on the center column and the wide ends resting on a heavy rib and part of the two piece side casting.

The three castings are bolted together, using asbestos packing in the seams. This is a very efficient tank for the purpose where solid caustic is used, and will last a life time. Being a round tank, the caustic drums are placed in a vertical position, with drum opening down on the surface of the grates, the drums are handled with the usual chain block and overhead rail.

The sketch shows only the crude glycerine evaporators. Two evaporators with a capacity of 80,000 of glycerine lye a day, will take care of the washes from the soap house. For instance, take eight kettles of soap a month, and three

washes of 40,000 lbs. each, this will amount to 120,000 of glycerine liquor for each kettle, eight times 120,000 lbs. will be 960,000-1,000,000 lbs. of glycerine liquor a month of 28 working days, therefore, 36,000 lbs. of this liquor must be evaporated each day to keep up with the production of glycerine washes from the kettles. Two evaporators of this capacity will be ample, allowing time wasted for possible breakdowns or repairs to the plant.

No spray or other equipment for powders is shown in the plan. However, provisional space on the top floor can be partitioned off suitable for the purpose. The plant can be a spray system, or chilled roller crystalizing type, both these systems being continuous, and representing a saving in time and labor over the old method. The resultant powder crystalizes more uniformly in texture and moisture, the latter result being difficult to obtain by older methods. Other units of the plant are more or less standard items, such as automatic equipment for slabbing, cutting and pressing.

### PERCENTAGES OF ALKALI NECESSARY TO SAPONIFY VARIOUS COMMON OILS AND FATS

Oil or Fat	% NaOH	% KOH
Coconut Oil .....	17.9—18.8	25.1—26.3
Corn Oil .....	13.2—13.8	18.6—19.3
Cottonseed Oil .....	13.6—14	19.1—19.6
Grease .....	13.6—14	19.1—19.7
Lard Oil .....	13.6—14	19.1—19.6
Linseed Oil .....	13.5—14	18.9—19.6
Olive Oil Foots .....	13.5—14	18.9—19.5
Palm Oil .....	14 —14.6	19.6—20.5
Rosin .....	12.1—13.8	17 —19.3
Tallow .....	13.8—14.3	19.3—20.0
Whale Oil .....	13.4—13.8	18.8—19.4



## APPROXIMATE CONSTANTS OF SOAP OILS

Oil or Fat	Sp. Gr. (Water at 15°)	Sap. No.	Iodine Value	Titer °C.	% Non-Sap.
Castor Oil	0.958—0.968	177—187	83—86	3°—	0.3—0.5%
Coconut Oil	0.926	251—263	8—10	20°—23°	0.2
Corn Oil	0.921—0.927	186—193	120—130	15°—19°	1.5—3.0%
Cottonseed Oil	0.915—0.926	191—196	103—115	32°—38°	0.7—1.6%
Linseed Oil	0.931—0.938	189—196	170—204	19°—21°	0.5—1.6%
Olive Oil	0.914—0.919	189—195	79—86	17°—21°	2.0—3.0%
Palm Oil	0.921—0.925	196—205	48—58	42°—45°	0.7—1.0%
Palm Kernel Oil	0.873/99°	244—255	16—23	20°—25°	0.2—0.5%
Peanut Oil	0.911—0.926	185—192	83—95	28°—30°	0.5—1.0%
Sesame Oil	0.920—0.926	188—193	103—115	21°—24°	1.0—1.8%
Soya Bean Oil	0.922—0.925	191—194	125—140	21°—24°	0.3—0.6%
Tallow (beef)	0.943—0.952	193—200	35—47	43°—45°	
Whale Oil	0.922—0.926	188—194	110—150	22°—24°	1.0—3.0%



# ACIDIC CONTENT OF COMMON SOAP OILS

Glycerides of Acids	Coconut Oil	Corn Oil	Cottonseed Oil	Linseed Oil	Olive Oil	Palm Oil	Palm Kernel Oil	Peanut Oil	Sesame Oil	Soyabean Oil	Tallow	Whale Oil
Arachidic .....	—	0.4	0.6	—	0.2	—	—	3.6	4.0	0.7	—	—
Lignoceric .....	—	0.2	—	—	—	0.1	—	2.9	0.4	0.1	—	—
Linolenic .....	—	—	—	34.1	—	—	—	—	—	2.2	—	—
Linolic .....	—	39.1	42.0	48.5	3.9	9.5	1.0	23.1	35.2	49.3	—	20.0
Myristic .....	20.0	—	0.4	—	Trace	0.6	16.0	—	—	—	2.0	8.0
Oleic .....	2.0	43.4	35.0	5.0	83.1	43.2	16.5	56.7	46.0	32.0	44.5	25.0
Palmitic .....	7.0	7.3	20.0	2.7	9.2	44.0	6.5	7.3	7.3	6.5	29.0	12.0
Palmitoleic .....	—	—	—	—	—	—	—	—	—	—	—	17.0
Stearic .....	5.0	3.3	2.0	5.4	2.0	2.9	1.0	5.5	4.4	4.2	24.5	—

Coconut oil also contains 10% Capric, 2% Caproic, 9% Caprylic and 45% Lauric. Palm Kernel Oil contains 6% Capric, 3% Caprylic and 50% Lauric. Whale Oil contains 18% Clupandonic.

## Comparative Values of Caustic Soda Solutions

%		Sp. Gr. 60° F.		Tw. 60° F.		Sp. Gr. 60° F.	
NaOH		@		@		@	
Na <sub>2</sub> O		%		Bé		%	
1	.77	1.6	2.2	60° F.	1.011	20.18	32.4
2	1.55	3.1	4.4	60° F.	1.022	20.95	33.4
3	2.32	4.6	6.6	60° F.	1.033	21.70	34.3
4	3.10	6.3	9.0	60° F.	1.045	22.40	35.2
5	3.88	7.7	11.2	60° F.	1.056	23.15	36.1
6	4.65	9.1	13.4	60° F.	1.067	24.00	36.9
7	5.39	10.5	15.6	60° F.	1.078	24.80	37.8
8	6.20	11.9	17.8	60° F.	1.089	25.60	38.6
9	6.98	13.2	20.0	60° F.	1.100	26.38	39.4
10	7.75	14.5	22.2	60° F.	1.111	27.15	40.2
11	8.53	15.8	24.4	60° F.	1.122	27.90	40.9
12	9.30	17.1	26.6	60° F.	1.133	28.70	41.7
13	10.09	18.3	28.8	60° F.	1.144	29.45	42.4
14	10.85	19.5	31.0	60° F.	1.155	30.22	43.1
15	11.62	20.7	33.4	60° F.	1.167	31.00	43.8
16	12.40	21.9	35.6	60° F.	1.178	31.80	44.5
17	13.20	23.1	37.8	60° F.	1.189	32.60	45.2
18	13.98	24.2	40.0	60° F.	1.200	33.35	45.9
19	14.72	25.2	42.0	60° F.	1.210	34.10	46.5
20	15.50	26.3	44.2	60° F.	1.221	34.90	47.1
21	16.30	27.4	46.6	60° F.	1.233	35.66	47.8
22	17.08	28.5	48.8	60° F.	1.244	36.45	48.4
32	17.85	29.5	51.0	60° F.	1.255	37.22	49.0
24	18.60	30.5	53.2	60° F.	1.266	37.99	49.6
25	19.40	31.5	55.4	60° F.	1.277	38.75	50.2

# Federal Specifications for Soap Products\*

## Automobile Soap (P-S-561)

Automobile soap shall be a pure vegetable oil paste soap containing no free alkali or acid, shall be relatively free from matter insoluble in alcohol, shall be homogeneous, free from adulterants of any kind, and without objectionable odor.

Matter volatile at 105° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter will be rejected without further test. The sum of free alkali and total matter insoluble in alcohol shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.2 per cent. Free acid, calculated as oleic, shall not exceed 0.2 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Unsaponified matter shall not exceed 4 per cent. Rosin shall not be present. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 50 per cent of volatile matter.

## Chip Soap (P-S-566)

Chip soap shall be a soap in chip form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for high-grade laundry work with soft water, when the presence of alkaline salts is objectionable.

Matter volatile at 105° C. shall not exceed 15 percent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter soluble in water shall not exceed 0.4 per cent. Titer of the mixed fatty acids prepared from the soap must be not less than 39° C. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 10 per cent of volatile matter.

## Cake Grit Soap (P-S-571)

Cake grit soap shall be of the following types as specified: Type A—for fine work, such as glass and enamel; Type B—for scouring and scrubbing.

### Type A—

Matter volatile at 105° to 110° C. shall not exceed 4 per cent. Deliveries which yield more than 4 per cent of volatile matter shall be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 88 per cent nor more than 93 per cent. The insoluble siliceous material shall consist of not less than 90 per cent of ground feldspar. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at 105° to 110° C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall not scratch glass or enameled surfaces. The material shall be unscented and shall be of a light gray or white color.

### Type B—

Matter volatile at 105° to 110° C. shall not exceed 5 per cent. Deliveries which yield more than 5 per cent of volatile matter shall be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Insoluble siliceous material shall not be less than 75 nor more than 85 per cent. The insoluble siliceous material shall be mainly quartz, and it all must pass through a No. 100 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of the

\* General and Detailed Requirements as specified in the Standard Stock Catalogue of the U. S. Federal Specifications Board.

matter volatile at 105° to 110° C., insoluble siliceous material, and alkali as alkaline salts. The cakes shall be well compressed and of a satisfactory degree of friability, which shall not be materially affected or lessened after immersion in or contact with water. The material shall be unscented and shall be of a light gray or white color.

#### Hand Grit Soap (P-S-576)

Hand-grit soap shall be a cake soap containing about one-third its weight of clean, finely divided insoluble siliceous matter, as free as possible from water, uncolored, unscented unless otherwise specified, thoroughly saponified, and well compressed in firm, smooth cakes.

Matter volatile at 105° C. shall not exceed 25 per cent. Deliveries which yield more than 25 per cent of volatile matter will be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall not exceed 1 per cent. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 25 nor more than 40 per cent. The insoluble siliceous material shall not yield more than 2 per cent of residue retained on a No. 100 sieve and not more than 10 per cent of residue retained on a No. 200 sieve. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be within 1 per cent of the difference between 100 and the sum of matter volatile at 105° C., insoluble siliceous material, and alkali as alkaline salts. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 25 per cent of matter volatile at 105° C.

#### Liquid Laundry Soap (P-S-586)

Liquid soap for laundry use shall be a clear solution of pure potash (or potash and soda) soap with or without glycerol or alcohol and containing not less than 12 per cent by weight of a volatile organic solvent or a mixture of such solvents. It shall yield a clear solution on mixing with soft water, shall quickly form a satisfactory lather, shall have no injurious effect and leave no objectionable odor on fabrics. Materials washed with this soap shall have, after drying, a soft feel and not appear more boardy or stiff than when washed with soft water.

The material shall be a clear solution, shall yield a clear, homogeneous solution on mixing with soft water, shall quickly form a satisfac-

tory lather, and shall leave no objectionable odor on fabric. Total anhydrous soap shall be not less than the equivalent of 24 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali, calculated as potassium hydroxide ( $\text{KOH}$ ), shall not exceed 0.05 per cent. Chloride, calculated as potassium chloride ( $\text{KCl}$ ), shall not exceed 0.3 per cent. Total matter insoluble in water shall not exceed 0.1 per cent. Volatile organic solvent shall be not less than 12 per cent. All constituents shall be calculated on the basis of the original sample. Fabric washed with the liquid soap shall show no more shrinkage or felting than occurs with similar fabric washed with soft water at the same temperature. Colored materials when washed with this soap shall not fade more than when washed the same number of times at the same temperature with soft water alone.

#### Ordinary Laundry Soap (P-S-591)

Ordinary laundry soap shall be a well-made, uniformly mixed laundry or common soap, made from soda and fats, with no excessive proportion of rosin and a moderate amount of matter insoluble in alcohol; shall be free from makeweights, and shall be suitable for use with moderately hard water for general cleaning and laundry purposes.

*Odor* shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on dishes or other objects after washing with a water solution of the soap and rinsing thoroughly with hot water. If desired, the odor of the material under the above conditions shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an air-tight, closed container for comparison with samples from deliveries.

Matter volatile at 105° C. shall not exceed 36 per cent. Deliveries which yield more than 36 per cent volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol and sodium chloride, shall be not less than 2 per cent nor more than 10 per cent. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 1 per cent. Rosin shall not exceed 25 per cent. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 34 per cent of volatile matter.

**Powdered Laundry Soap (P-S-596)**

Powdered soap for laundry use shall be a soap in powdered form made from soda and fats, without rosin, as free as possible from water and all substances other than true soap, of a light uniform color, free from disagreeable odor, and suitable for high-grade laundry work with soft water, when the presence of alkaline salts is objectionable.

Matter volatile at 105° C. shall not exceed 7 per cent. Deliveries which yield more than 7 per cent of matter volatile at 105° C. will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 3 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 0.4 per cent. Titer of the mixed fatty acids prepared from the soap shall be not less than 39° C. Residue retained on a No. 12 sieve shall not exceed 1.5 per cent. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 5 per cent of volatile matter.

**Soap Powder (P-S-606)**

Soap powder shall be a uniform mixture of soap and sodium carbonate in powdered form. It shall be readily soluble in tepid water, shall contain no free caustic alkali or inert filler, and shall be free from objectionable odor.

Anhydrous soap shall be not less than 15 per cent. Sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) shall be not less than 30 per cent. The aggregate of anhydrous soap and sodium carbonate shall be not less than 55 per cent.

**Salt-Water Soap (P-S-611)**

Salt-water soap shall be a soap well made from pure coconut oil, pure palm kernel oil, or a mixture thereof, and the necessary alkali. It shall be entirely soluble in both sea water and fresh water and shall make a suitable lather.

Matter volatile at 105° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter will be rejected without further test. Total matter insoluble in alcohol shall be not less than 2 per cent nor more than 3 per cent and shall consist, essentially, of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ). Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.5 per cent. Matter insoluble in water shall not exceed 0.5 per cent. Chloride, calculated as sodium chloride (NaCl), shall be not less than 2.5 per cent nor more than 3.5

per cent. Rosin, sugar, and foreign matter shall not be present. The acid number of the mixed fatty acids prepared from the soap shall be not less than 240. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 55 per cent of volatile matter.

**White Floating Toilet Soap (P-S-616)**

White, floating soap shall be a cake soap, at least as good in every respect as one made from soda and a mixture of high-grade tallow with 25 to 30 per cent of coconut oil, of good light color, without objectionable odor, thoroughly saponified, and so prepared as to float on water.

Matter volatile at 105° C. shall not exceed 34 per cent. Deliveries which yield more than 34 per cent volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 2.0 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.15 per cent. Chloride, calculated as sodium chloride (NaCl), shall not exceed 1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Rosin, sugar, and foreign matter shall not be present. The acid number of the mixed fatty acids prepared from the soap shall be not less than 212. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 28 per cent of volatile matter.

**Liquid Toilet Soap (P-S-618)**

Liquid toilet soap shall be a clear solution of pure vegetable oil potash (or potash and soda) soap with or without glycerol or alcohol, suitably perfumed, and free from all foreign matter. It shall quickly form a satisfactory lather and have no injurious effect and leave no objectionable odor on the skin.

The material shall be a clear solution, free from objectionable odor, other than from coconut oil, and shall form a satisfactory lather. Total anhydrous soap shall be not less than the equivalent of 15 per cent potash soap. Total matter insoluble in alcohol shall not exceed 0.5 per cent. Free alkali calculated as potassium hydroxide (KOH) shall not exceed 0.05 per cent. Chloride calculated as potassium chloride (KCl) shall not exceed 0.3 per cent. More than traces of sulphates and sugar shall not be present. All constituents shall be calculated on the basis of the original sample.



### Milled Toilet Soap (P-S-621)

Milled toilet soap shall be a high grade, milled cake soap, as free as possible from water, either colored or uncolored, and mildly perfumed unless otherwise specified, thoroughly saponified, well compressed in firm, smooth cakes of a size and shape specified in the contract. It should lather freely when used with cold, soft, water.

Matter volatile at 105° C. shall not exceed 15 per cent. Deliveries which yield more than 15 per cent of volatile matter will be rejected without further test. The sum of free alkali, total matter insoluble in alcohol, and sodium chloride shall not exceed 1.5 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Matter insoluble in water shall not exceed 0.2 per cent. Unsaponified saponifiable matter shall not exceed 0.3 per cent. Rosin, sugar, and foreign matter shall not be present. The percentage of matter volatile at 105° C. will be computed on the basis of the soap as received, but all other constituents will be calculated on the basis of material containing 15 per cent of matter volatile at 105° C.

### Caustic Soda for Cleaning (P-S-631)

Caustic soda shall be furnished in flake, coarsely powdered, or granular form, as specified by the purchaser. It shall contain not less than 90 per cent sodium hydroxide (NaOH) and not more than 4 per cent carbonate, calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ).

### Laundry Soda, (Washing Soda), (P-S-641)

Laundry soda shall be a white uniform powder composed of sodium carbonate and sodium bicarbonate. Total alkalinity, calculated as  $\text{Na}_2\text{O}$ , shall be not less than 39 per cent or more than 41 per cent. Matter insoluble in water shall not exceed 0.1 per cent.

### Mechanics' Hand Detergent (P-D-221)

Detergent for mechanics' use shall be of the following types, as specified: Type I—hand grit paste soap; Type II—hand scouring powder. It shall be a uniform mixture in paste or powder form, as specified, and shall be satisfactory for removing oil, grease, paint, printing inks, and other occupational soil from the hands of automobile mechanics, machinists, and other operators without harmful effect on the skin.

#### Type I—(Hand grit paste soap).

The material shall be a uniform paste. The odor shall not be objectionable. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an air-

tight, closed container for comparison with samples from deliveries. Volatile matter at 105° to 110° C. shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of volatile matter shall be rejected without further test. Alkaline salts, calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall not be more than 2 per cent. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.02 per cent. Free acid, calculated as oleic acid, shall not exceed 0.2 per cent. Anhydrous soap, calculated as soda soap, shall be not less than 8 per cent nor more than 16 per cent. Insoluble siliceous matter shall be not less than 25 per cent nor more than 50 per cent and shall conform to the following fineness requirements:

Retained on—	Minimum Percent	Maximum Percent
No. 40 sieve .....	—	0
No. 60 sieve .....	10	20
No. 80 sieve .....	30	45
No. 100 sieve .....	35	55
No. 200 sieve .....	60	—

The material shall retain the consistency of a firm paste after keeping in a closed container for 6 hours at 30° to 32° C. (86° to 89.6° F.). The material shall not deteriorate when kept in an airtight container. The percentage of matter volatile at 105° to 110° C. will be computed on the basis of the grit paste soap as received, but all other constituents will be calculated on the basis of material containing 50 per cent of matter volatile at 105° to 110° C.

#### Type II—(Hand scouring powder).

The material shall be a uniform, free-flowing powder. The odor shall not be objectionable. If desired, shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. Volatile matter at 105° to 110° C. shall not exceed 5 per cent. Deliveries which yield more than 5 per cent of volatile matter shall be rejected without further test. Alkaline salts, calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall be not less than 2 per cent nor more than 5 per cent. The alkaline salts shall consist of borax, sodium carbonate or a mixture thereof. Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent. Free acid, calculated as oleic acid, shall not exceed 0.2 per cent. Anhydrous soap, calculated as soda soap, shall be not less than 17 per cent. Insoluble siliceous matter shall be not less than 60 per cent nor more than 76 per cent and shall conform to the following fineness requirements:



Retained on—	Maximum Percent
No. 60 sieve .....	5
No. 100 sieve .....	30
No. 200 sieve .....	60

Rosin or sugar shall not be present. All constituents shall be reported on the basis of the sample as received.

### Sweeping Compound (P-C-591)

Sweeping compound shall consist of a uniform mixture of the materials as specified for each type and shall be artificially colored or uncolored as specified by the purchaser. If desired, shall conform to the color of a sample mutually agreed upon by buyer and seller.

#### Type I—(Mineral-oil compound).

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. The material shall, on use, not stain flooring or adjacent surfaces. The material shall not give off flammable vapors when tested according to section F-2b. Material not meeting the test for flammable vapors will be rejected without further test. Water (matter volatile at 105-110° C.) shall be not more than 10 per cent by weight. Refined mineral oil (such as paraffin oil) shall be not less than 15 per cent and not more than 20 per cent by weight. Clean, fine, sharp sand or feldspar sand shall be not less than 35 per cent and not more than 50 per cent by weight. Not more than 1 per cent of sand shall be retained on a No. 20 sieve when tested according to section F-2j. Fatty oils shall not be present. The remainder shall be finely ground sawdust. Not more than 1 per cent of sawdust shall be retained on a No. 8 sieve when tested according to section F-2j.

#### Type II—(Water-wax-emulsion compound)

Odor shall not be objectionable. If desired shall conform to the odor of a sample mutually agreed upon by buyer and seller. The mutually agreed upon sample shall be kept in an airtight, closed container for comparison with samples from deliveries. The material shall not stain flooring surfaces on which it may be used. The material shall not give off flammable vapors when tested according to section F-2b. Material not meeting the test for flammable vapors will be rejected without further test. Water (matter volatile at 105-110° C.) shall be not more than 12 per cent by weight. Clean, fine, sharp sand, or feldspar sand shall be not less than 60 per cent and not more than 70 per cent by weight. Not more than 1 per cent of sand shall be re-

tained on a No. 20 sieve when tested according to section F-2j. Finely ground sawdust shall be not less than 5 per cent and not more than 10 per cent by weight. Not more than 1 per cent of sawdust shall be retained on a No. 8 sieve when tested according to section F-2j. The remainder shall be waxes and emulsifying agents.

### Paste Metal Polish (P-P-556)

Polishing paste shall consist of a uniformly mixed paste of such a consistency as to be easily applied. It shall be free from disagreeable odor and shall have good cleansing and polishing properties. It shall be free from acid, cyanides, or other ingredients having injurious effect upon metal, and shall not scratch metal.

### Silver Polish (P-P-571)

Silver polish, types A, (liquid), and B, (paste), shall consist of finely ground, white, diatomaceous or infusorial earth, suitably compounded with a neutral soap. Silver polish, type C, (powder), shall consist solely of finely ground, white, diatomaceous or infusorial earth, free from adulterants or foreign matter. Types A and B shall be free from acids or cyanides. All types of silver polish shall have good cleansing and polishing properties and shall contain abrasives of such fineness that 100 per cent will pass through a standard No. 200 sieve.

### Stove Polish (P-P-576)

Stove polish shall produce a deep, lustrous black color when applied as directed by the manufacturer. It shall produce no odors upon burning and shall produce a durable coating that will not readily be burned off.

Type I.—Polish, stove, liquid, shall be of such consistency that the addition of a fluid will not be necessary in order to make it free-flowing. The vehicle of the polish shall be a non-inflammable liquid.

Type II.—Polish, stove, paste, shall be non-inflammable and shall be of such consistency that it can be readily applied.

Type III.—Polish, stove, powder, shall readily form a paste with water, and shall be non-inflammable.

Type IV.—Polish, stove, cake, shall readily disintegrate in water and form a paste and shall be non-inflammable.

### Scouring Powder for Floors (P-P-591)

Scouring powder for floors shall be of the following types, as specified: Type A—for fine marble floors; Type B—for tile or ceramic and terazzo floors; Type C—soap scouring compound.

#### Type A—(For fine marble floors).

Matter volatile at 105° to 110° C. shall not exceed 10 per cent. Deliveries which yield

more than 10 per cent of volatile matter shall be rejected without further test. The sum of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) and anhydrous soap shall not exceed 7 per cent nor be less than 2 per cent. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. The material shall not scratch nor discolor marble. The material shall be a uniform powder, shall be unscented, and shall be of a light gray or white color.

**Type B**—(For tile or ceramic and terrazzo floors).

Matter volatile at  $105^\circ$  to  $110^\circ$  C. shall not exceed 10 per cent. Deliveries which yield more than 10 per cent of volatile matter shall be rejected without further test. The sum of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) and anhydrous soap shall not be less than 2 per cent. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 80 per cent nor more than 95 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve. The material shall be a uniform powder, shall be unscented, and shall be of a light-gray or white color.

**Type C**—(Soap scouring compound).

Matter volatile at  $105^\circ$  to  $110^\circ$  C. shall not exceed 6 per cent. Deliveries which yield more than 6 per cent of volatile matter shall be rejected without further test. Carbonated alkali, calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) shall not be less than 6 per cent nor more than 20 per cent. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent. Anhydrous soap shall be not less than 3 per cent nor more than 10 per cent. Insoluble siliceous material shall be not less than 60 per cent nor more than 90 per cent. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve. The material shall be a uniform powder, shall be unscented, and shall be light-gray or white in color.

#### Scouring Powder for Glass (P-P-596)

Shall be a fine, uniform powder, and shall be suitable for cleaning highly polished glass surfaces which must transmit light efficiently, such as cabin windows and windshields of aircraft.

The material shall clean glass surfaces satisfactorily without scratching the glass or leaving an oily or other film on the surface. The material shall be a uniform, free-flowing powder, shall be scented or unscented, and shall be white or light gray in color. Matter volatile at  $105^\circ$  to  $110^\circ$  C. shall not exceed 4 per cent. Deliveries which yield more than 4 per cent of volatile matter shall be rejected without further test. Alkali as alkaline salts (total alkalinity of matter insoluble in alcohol), calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall not exceed 5 per cent. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent. Insoluble siliceous material shall be not less than 85 per cent nor more than 93 per cent, and shall consist of ground feldspar or other insoluble siliceous abrasive that will not scratch highly polished glass surfaces. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent. Rosin, sugar, and foreign matter shall not be present. Anhydrous soda soap shall be not less than 4 per cent and shall be within 1 per cent of the difference between 100 and the sum of the matter volatile at  $105^\circ$  to  $110^\circ$  C., insoluble siliceous material, and alkali as alkaline salts.

#### Technical Trisodium Phosphate (O-T-671)

Technical trisodium phosphate shall be a white, uniform product in finely granulated form, and shall contain not less than 95 per cent of crystalline trisodium phosphate ( $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$ ).

It shall be a white, uniform, finely granulated product. Total alkalinity to methyl orange indicator, calculated as  $\text{Na}_2\text{O}$ , shall be not less than 15.5 per cent or more than 20 per cent. Phosphoric anhydride ( $\text{P}_2\text{O}_5$ ) shall be not less than 17.7 per cent. Matter insoluble in distilled water shall not exceed 0.1 per cent. No residue shall be retained on a No. 10 sieve (sieve opening=0.0787 inch) and the residue retained on a No. 100 sieve (sieve opening=0.0059 inch) shall be not less than 50 per cent.

#### Soda Ash (O-S-571)

Soda-ash shall be of two grades as specified: Grade A—58 per cent ordinary (or light); Grade B—58 per cent dense.

Soda-ash shall be the high grade anhydrous sodium carbonate in powdered form and shall be the grade specified by the purchaser. It shall conform to the following requirements:

Total alkalinity of the material after drying for one hour at  $150^\circ$  to  $155^\circ$  C. shall be not less than 58 per cent calculated as  $\text{Na}_2\text{O}$ ;

equivalent to 99.2 per cent of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ). Hydroxide ( $\text{NaOH}$ ), after drying the material for one hour at  $150^\circ$  to  $155^\circ$  C. shall not exceed 0.1 per cent. Bicarbonate, after drying the material for one hour at  $150^\circ$  to  $155^\circ$  C., shall not exceed 0.5 per cent. Matter insoluble in water, after drying the material for one hour at  $150^\circ$  to  $155^\circ$  C., shall not exceed 0.25 per cent. The total sulphur calculated as sodium sulphide ( $\text{Na}_2\text{S}$ ), after drying the material for one hour at  $150^\circ$  to  $155^\circ$  C., shall not exceed 0.1 per cent. Loss in weight on heating the material as received at  $150^\circ$  to  $155^\circ$  C. for one hour shall not exceed 1 per cent.

*Grade A*—Thirty grams of the light soda-ash (grade A) as received shall have a volume of from 55 to 65 milliliters.

*Grade B*—Thirty grams of the dense soda-ash (grade B) as received shall have a volume of from 30 to 40 milliliters.

#### **Sodium Cyanide (O-S-591)**

Sodium Cyanide shall be a high-grade cyanide of sodium, practically free from sodium chloride and other impurities that would interfere with the liberation of hydrocyanic-acid gas generated by the usual method of treatment with sulfuric acid. It shall contain not less than 96 per cent of actual sodium cyanide ( $\text{NaCN}$ ) equivalent to 51 per cent cyanogen ( $\text{CN}$ ). It shall not contain chlorides in excess of 0.5 per cent expressed as sodium chloride ( $\text{NaCl}$ ). It shall be practically free from iron and the residue after treatment with sulfuric acid to generate hydrocyanic acid shall be completely soluble in water.

Unless otherwise specified, the sodium cyanide delivered under this specification shall be in the form of balls or pieces weighing from  $\frac{1}{2}$  ounce to 4 ounces each.

#### **Sodium Fluoride (O-S-601)**

Sodium fluoride shall be a good grade commercial product in the form of a uniform, fine, dry, white powder, suitable for dusting, free from lumps or gritty material and practically free from matter insoluble in water. It shall contain not less than 90 per cent of sodium fluoride,  $\text{NaF}$ , the remaining 10 per cent to consist of the usual impurities in a good grade of commercial sodium fluoride, such as sodium silico-fluoride, sodium bifluoride, sodium carbonate, sodium chloride, sodium sulfate, etc.

#### **Insect Powder (O-P-571)**

Insect powder shall consist of the powdered flower heads of *Chrysanthemum* (*Pyrethrum*) *cinerariaefolium* (Trev. Bocc.). It shall be a product resulting from the reduction to an impalpable powder of insect flower heads of the species named and free from added stems and other adulterants. It shall be made of flowers that have been properly harvested and cured so as to retain the maximum insecticidal efficiency and are free from mold, and the powder shall have the characteristic color and odor. It shall not contain insect flower stems in excess of the amount occurring attached to flowers as harvested, and in no case in excess of 5 per cent. It shall not contain more than 2 per cent of ash insoluble in dilute hydrochloric acid.



# Trisodium Phosphate Detergents

By C. A. TYLER, Ph.D.

**T**HE compounding of cleaners, dishwashing compounds, scrubbing compounds, paint cleaners, paint removers, and many other detergents containing trisodium phosphate as a major or minor ingredient has, within the last decade, become a tonnage industry. These preparations are marketed in packages of 1 to 16 ounces or more, in kegs, barrels, and even in larger individual quantities. They consist of mixtures of trisodium phosphate with nothing, with soda ash or the hydrated equivalent, washing soda, with bicarbonate of soda, with modified soda, with sodium metasilicate, with caustic soda, and with almost every other known industrial alkali. In some cases these are combined with physical cleaners such as silica, feldspar, pumice, pumicite, rottenstone, ground lava, and other abrasives. Sometimes complex combinations of these are used.

There is no other industrial alkali for which the channels of distribution of so large a proportion of the product, cannot be traced to the ultimate consumer. Trisodium phosphate is evidently sold in large tonnage by the manufacturers and but little used by consumers as such. The explanation of this is that the major use of trisodium phosphate is in branded specialties which do not disclose their composition. At one time several, if not all, of the manufacturers of trisodium phosphate were attempting to promote their sales by recommending its inclusion in compounded detergents.

Recent production figures for trisodium phosphate itself are:

Year	Production Tons	Value
1927.....	63,531	\$4,524,595
1929.....	82,045	5,008,815
1931.....	82,954	4,675,085

The scale on which trisodium phosphate products are manufactured varies widely. One large manufacturer merchandises trisodium phosphate without blending, and advertises nationally through newspaper, magazine and car-card recommendations. A multitude of "cellar-manufacturers" prepare the material with or without blending, at home or in their garages, at night and on Sunday, and distribute it through vary-

ing types of trade channels during the remaining part of their waking hours.

The physical forms in which trisodium phosphate compounds appear on the market vary from free-flowing powders through various semi-solid and solid masses,—not necessarily intentionally so,—to paste and semi-liquid products. The latter are usually metal-cleaning compounds containing soap. These are sold at competitive prices such that the presence of a considerable amount of water is essential. However, the great majority of trisodium phosphate compounds are non-saponaceous detergents.

It is rather uncommon for compounders to include trisodium phosphate in products wherein the compound is first produced in a liquid or paste form and then solidified, although there are examples of this type of product. To phrase it differently, trisodium phosphate is most commonly incorporated by physical or mechanical admixture rather than by inclusion during manufacture. The low price of disodium phosphate tends to encourage the latter, since the disodium compound in solution can be readily converted into trisodium phosphate by the addition of the proper amount of caustic soda.

**T**RISODIUM phosphate appears on the market as such in a somewhat greater number of physical forms than might be expected. The normal form is the crystalline hydrate with twelve molecules of water of hydration. This has the form of characteristic tabular crystals, easily recognizable even under a low-powered magnifying glass. An anhydrous amorphous form is also offered at a correspondingly increased price. The salt also appears as round pellets, frequently described as spray-dried, although spray-congealed is a more correct term. The composition approximates that of the usual crystalline hydrate. Because of the method of manufacture, this form can be offered in colors as well as in white. The acceptance of the spray-congealed form has been limited by the fact that old manufacturers with an established trade cannot readily alter even the physical form of their product, without creating prejudice on the part of the user. The spray-congealing process was probably devised originally to avoid the caking



of the salt, as this sometimes occurs in the hydrated product. The principle applied is that of producing a minimum amount of contact between the surfaces of the particles. Another method of preventing caking is the production of double salts of the phosphate hydrate with sodium chloride, sodium borate, sodium hypochlorite, etc., e.g. 5 ( $\text{Na}_3\text{PO}_4 \cdot 12 \text{H}_2\text{O}$ ),  $\text{NaCl}$ . As might be expected, the electrometric titration curve of saline trisodium phosphate falls below that of normal trisodium phosphate.

When trisodium phosphate is not blended, the only problems are those of packaging and selling. For barrel quantities, the former may consist of merely removing one label and substituting another, and selling under a brand name at a higher price. The compounder does not find his operations so easy. When trisodium phosphate is mixed with an industrial alkali which is not fully hydrated, an interchange of water of hydration may occur. This problem would not exist if the anhydrous salt were used, but compounders in general find the use of the latter impractical because their products are usually sold on a competitive basis. This interchange of the water of hydration occurs if the tendency of the anhydrous salt to take up water, its vapor pressure in a negative sense, is greater than the vapor pressure of the hydrated trisodium phosphate.

The field of manufacture of these compounds is strewn with the business wrecks of those who have sold blends of trisodium phosphate which left the factory as free-flowing powders, and a few weeks or months later were found by the dealer or consumer to have a rock-like consistency. This explains a tendency in the trade to blend trisodium phosphate with modified soda rather than with soda ash, a tendency which is technically unsound. The formulation of such blends is far removed from the simple matter of mixing two individual alkalies selected at random. Aside from a proper consideration of the vapor pressure of the materials compounded, other attempts have been made to solve the caking problem. One is to coat the individual particles with protective, water-soluble films. Another is to mix in a protective agent to exercise the same function as that of starch in baking powder. No marked success has been attained by coating methods. The avoidance of caking of the compound is normally a specific problem, depending on the individual product. Under certain conditions violation of general rules can be compensated for by specific methods of handling.

The possible interchange of water of hydration is not the only difficulty. Many compounds, when not properly formulated, exhibit tendencies toward mechanical segregation, resulting in

the major portion of the trisodium phosphate being at the top of the package, and the major portion of the other ingredient or ingredients at the bottom, or vice versa. This is overcome by having the particle size of the various ingredients similar, and by avoiding wide differences in the specific gravity of the ingredients.

**T**HE formulation of compounds containing trisodium phosphate is frequently defective from a theoretical standpoint. Theoretically trisodium phosphate may be blended with true alkalies or with the completely neutralized type of alkaline salts. This would exclude borax, bicarbonate of soda, and modified soda. While for practical reasons the latter are sometimes used, formulation to include them can be avoided with greater efficiency in the resulting product. Compounds of trisodium phosphate with caustic soda are relatively unstable to exposure. Such mechanical mixtures exhibit the well-known property of caustic soda of absorbing moisture from the air, and liquefying or caking. Inventions by non-technical workers in the field are numerous. Too often they resemble a case in which a man produced what he called an ideal paint brush cleaner by blending three commercial brands of T.S.P. in varying proportions. Analysis showed that it, and the three commercial products blended were 100 per cent trisodium phosphate.

The so-called all-purpose cleanser for use in the home may contain almost anything. Trisodium phosphate is frequently an important ingredient because of its real merit as a detergent. For metal cleaners the salt is frequently compounded with caustic soda, soda ash or soap, or with any combination of these. For paint brush cleaners, caustic soda must be low, if present at all. Paint cleaners should not ordinarily include any caustic soda or sodium metasilicate. The milder industrial alkalies may be blended with trisodium phosphate for this purpose. Paint removers on the other hand, may contain a certain amount of excess soda. As a paint remover, trisodium phosphate is used at about one pound to the gallon, in contrast to one ounce per gallon for the cleaning of paint.

The field of dishwashing compounds is a favorite for trisodium phosphate compounders. Some improve the product by adding a pH indicator which shows whether or not the material is nearly exhausted, since the alkalinity may be largely neutralized by acidity from the soil on dishes. Color change indicates exhaustion of alkaline detergent action. Other producers incorporate a sterilizing agent, which may be added solely as an admixture. One manufacturer utilizes a solid mixed salt of trisodium phosphate with sodium hypochlorite to introduce the sterilizing effect. A type of product

which is beginning to attract attention is the fused brick of trisodium phosphate, with other alkalies. This is used primarily in dishwashing machines and is designed for slow, uniform solution to keep the pH of the wash liquid constant.

**T**HERE is a whole class of cleansing materials consisting essentially of an abrasive, and one or more alkaline salts. Many of these are compounded of various grades of silica with soda ash. There is a tendency among the more meritorious to use some trisodium phosphate, or to use it as the sole alkaline salt.

Until the relatively recent use of sodium metasilicate as a bottle-washing compound, trisodium phosphate largely divided this field with caustic soda,—with a tendency for the latter to predominate. The use of caustic soda is declining and that of metasilicate increasing. Trisodium phosphate is apparently holding its own. The latter tends to counteract the too-high wetting power of sodium metasilicate against the metal of bottle-washing machinery. This high wetting power causes the detergent solution to creep into the bearings and displace the lubricant.

One of the specific properties of trisodium phosphate is its ability to react with lubricating

greases containing heavy metal soaps. For this reason it is sold directly to factories to remove oil and grease from both clothing and machinery. It is claimed that by interchange of radicals, the corresponding heavy metal phosphates and sodium soaps are formed, with a resultant detergent action primarily due to the soap.

The detergent properties of trisodium phosphate have been discussed in detail elsewhere. In passing, it may be mentioned that an expert in the field rates it high as to wetting power, although not as high as sodium metasilicate,—high in emulsifying and deflocculating power, and in the degree of alkalinity. He rates it low only in total neutralizing value, a property which is important only when a maximum of acid soil is to be removed. The remarkable emulsifying and deflocculating power of the salt cannot be explained on the basis of its chemical composition. In fact, no satisfactory explanation is available. The compounder naturally is much more interested in the fact that it has such properties than in the reason why. Everything considered, trisodium phosphate has probably been the basis of more detergent compounders' fortunes than has any other individual ingredient.



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# Testing Liquid Insecticides

*Official Peet-Grady Method of  
National Association of Insecticide & Disinfectant Manufacturers  
with Minimum Standard and Oil Specifications*

**T**HE minimum standard for general liquid household spray insecticides, and the official Peet-Grady Method for testing such insecticides, as adopted by the National Association of Insecticide & Disinfectant Manufacturers, is published herewith in detail. Specifications for the Pennsylvania oil designated for testing the comparative resistance of house flies bred in one laboratory as compared with those bred in another, are also given.

The exact wording of the minimum insecticide standard as adopted by the Association is as follows: "The members of the National Association of Insecticide & Disinfectant Manufacturers agree that a minimum standard for a general household liquid spray insecticide should be 95% down ten minutes after spraying, and at least 60% kill, twenty-four hours after spraying, as determined by the Peet-Grady Method on house flies. In addition, the liquid base should exceed 120 deg. F. in flashpoint as determined by the Tagliabue open cup method, and should not be referred to as kerosene, kerosene petroleum, or petroleum insecticide base in the future, but as a hydrocarbon distillate base. These tests shall be conducted at a temperature of 85 deg. F. and 60 to 70% relative humidity. To compare the resistance of flies used in one laboratory to those used in another laboratory, this method will be followed out using ordinary kerosene as originating in the Pennsylvania field. Per cent knock down and per cent kill by this oil will be set forth in the complete specification. The flies used in this test shall be five days old."

## THE PEET-GRADY METHOD

### **A Biological Method for the Determination of the Effectiveness of Household Insecticides**

*This paper is a revision of the original papers from the Research Laboratories of the Röhrl and Haas Co., Inc. by C. H. Peet and A. G. Grady, ("Journal of Economic Entomology," vol. 21, pgs. 598-625, August, 1928)*

## THE STANDARD

**The official minimum standard of the National Association of Insecticide & Disinfectant Manufacturers for general household liquid spray insecticides, as recommended by the Insecticide Committee and adopted by the Association, is as follows:**

### **By Peet-Grady Method on house flies—**

**Down in ten minutes.....95%**

**Dead in 24 hours.....60%**

**Age of test flies.....5 days**

**Temperature of chamber.....85 F.**

**Relative Humidity of  
chamber .....60-70%**

**Flashpoint.....Not less than 120 F.  
(Tagliabue Open Cup)**

*prepared under the supervision of the Insecticide Standardization Committee as a part of the standardization program of the National Association of Insecticide & Disinfectant Manufacturers.*

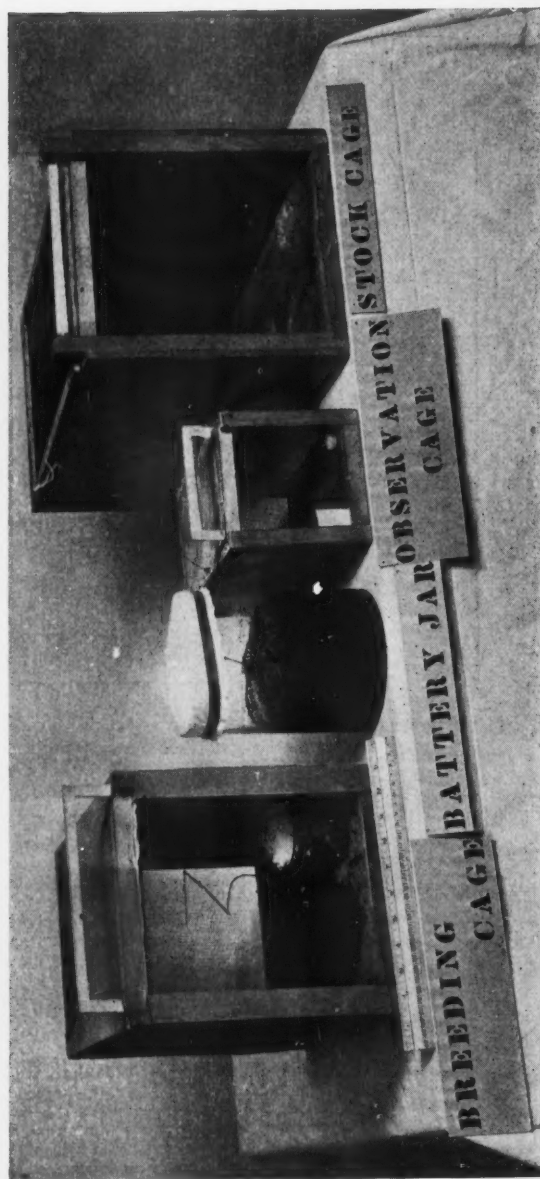
**T**HIS paper details a successful method evolved whereby large numbers of house flies can be reared through the whole year. The technic employed is simple, inexpensive and dependable. Full credit for the continuous breeding of this insect should be given to Glaser<sup>1</sup> who conceived the idea of supplementing the larval medium with yeast cells suspended in water during the winter months.

The literature on the biology of *Musca domestica* has assumed extensive proportions and it is not the intention of the writers to deal with it except to note some observations on the activity and longevity of the imagines during the winter months.

The larvae were reared throughout the winter on a medium consisting of fresh horse manure which was kept in a moist condition with water and yeast cells suspended in water, according to Glaser's method. Excellent results were obtained. Attempts were made

<sup>1</sup> Note on the continuous Breeding of *Musca domestica*, Journ. Econ. Ent., 1927, XX, 432-433.

The Required Fly-Breeding Equipment for the Peet-Grady Method.



Left—Maggots of the House Fly in Larval Stage.



Right—Eggs of House Fly Magnified many times.





during the latter half of January and during the month of February to rear flies on horse manure alone. In every case, except two, the insects died either in the larval or pupal stages. In the two successful attempts the horse manure was taken from the stables during a warm spell. Whether this had anything to do with carrying the larvae through to the adult stage was not determined.

From these experiences and the experiences of other investigators it was concluded that unless the horse manure was supplemented during the winter months larval life could not be supported and a continuous supply of insects could not be maintained.

The adult insects thrived exceedingly well on a diet consisting of milk, lump sugar, sweetened bread and yeast suspended in water. About 10 cc. of milk was dropped into the cages every day and about the same amount of yeast suspension was fed every second day. Fresh sweetened bread was placed in the cages about once a week. The bread was kept in an assimilable condition by wetting it with water. Other foods were added to this diet at different times such as beef extract, casein and fish-scrap. However, the adults developed sufficiently well on milk, bread, sugar and yeast so that the strictly protein foods were not used as regular parts of the diet.

The apparatus and equipment used to rear the house flies throughout the winter months were as follows: A constant temperature insectary where the breeding cages, rearing jars and stock cages were kept; breeding cages in which the insects were bred and oviposition took place; rearing jars in which the insect was reared from the egg to the adult stage; and finally, stock cages where the flies to be used for insecticidal tests were kept.

### *Insectary*

**A** ROOM 12 feet long, 11 feet wide and 9 feet high was thoroughly insulated with "balsam wool." One end and one side wall contained double windows which were lightly sprayed with whitewash. The entrance door was in one corner. Shelves lined three of the walls and a rack of shelves was built in the center of the room. The heating element consisted of four 1 inch steam pipes totaling 72 feet in length running along the inside of the two outside walls of the chamber. A Sarco heat regulator was used to control the temperature of the heating unit.

Electricity may be substituted for steam in heating the room if it is considered more desirable. Excellent temperature control can be obtained by using a unit similar to that manufactured by the General Electric Co., Catalogue No. 2829653 G-3, CR 7002, 110 volt.

A cooling unit consisting of an Aerofin radiator containing 300 feet of  $\frac{3}{4}$  inch, finned radiation was suspended in the center of the room from the ceiling and connected to a cold water supply (this water was about 50 to 55° F. summer and winter). A Siphon thermostatic valve controlled the flow of water through the cooling unit and a drip pan suspended beneath the cooling unit caught the condensate which collected on the cooling coils and delivered it by a drain to a sewer line. The temperature regulators were set at 85° F. and a Brown Recording Thermometer showed that the system thus installed was capable of holding the temperature of the insectary to 85° F.  $\pm 1^\circ$ .

The humidifier described in the original paper was later eliminated since it was found that the moisture of the culture medium in the rearing jars kept the humidity of the chamber at about 70%. Strict control could not be obtained without recourse to very elaborate equipment.

### *Breeding Cages*

**B**ECAUSE flies are susceptible to nutritional deficiency diseases and to attacks of parasites and parasitic fungi it was found best to keep the insects used for breeding purposes in relatively small separate cages so that if one colony of breeders became infected the disease could be checked before it spread to the other cages. As a result of this precaution, no high mortality occurred among the flies in the breeding cages that could be laid to a diseased condition.

As it was desired to have on hand hundreds of flies of known ages at all times, six breeding cages were used. Their dimensions were: length, 18 inches; breadth, 9 inches; height, 10 inches. The floor was made of a board  $\frac{1}{2}$  inch thick to which the frame was attached. The frame was constructed of  $\frac{1}{2}$  inch strips. The upright strips were nailed to the floor of the cage and connected by  $\frac{1}{2}$  inch crosspieces. The sides, top and back were made of wire fly screening, (1/16 inch mesh) tacked to the frame. The front was a piece of glass set in grooves which served as a door. These cages are easy to clean, provide plenty of room for the insects to move about and access to the inside is gained easily by pushing up the glass door to introduce food and insects.

### *Rearing Jars*

**O**RDINARY battery jars 6 inches in diameter by eight inches high were used for rearing the larvae. These jars were closed by pieces of cheesecloth about 9 inches in diameter which were held in place by  $\frac{3}{4}$  inch elastic "garters." This type of top is inexpensive, easily made, gives entirely adequate ventilation, and will serve for a number of generation of flies.

### *Stock Cages*

**V**ARIOUS efforts were made to develop cages which would allow automatic or semi-automatic transfer of flies from the rearing jars but none proved very successful and ultimately the same type of cage was adopted as were used for breeding cages. These cages were numbered in order that the age of the flies contained therein might be recorded.

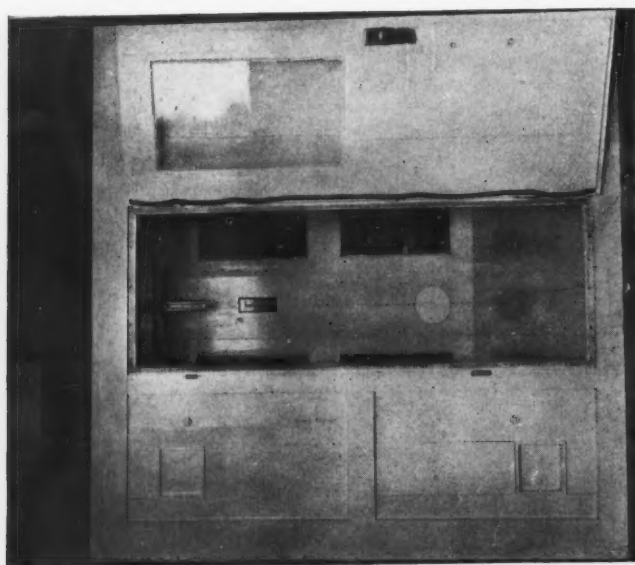
Since flies were not used for insecticide tests after they were 5 days old, only five cages were necessary for a series but when large numbers of flies are being bred, it becomes necessary to have duplicate series of cages in order that overcrowding of the cages may be avoided.

Transfer of the flies from rearing jars to stock cages is accomplished by lifting the glass slide of the cage, inserting the covered end of the rearing jar, slipping off the cheesecloth cover, tapping the jar, withdrawing the jar, closing the glass slide and replacing the cheesecloth cover.

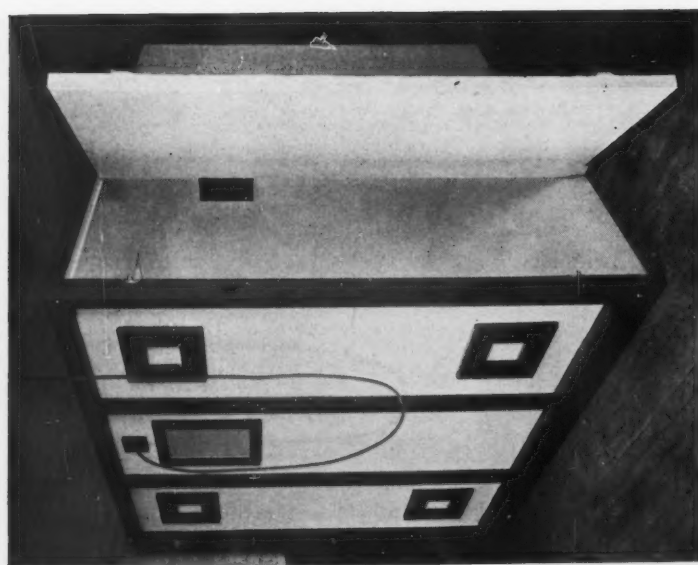
### *Procedure*

**I**N each of the breeding cages about two hundred adult flies, about equally divided as to sex, were kept. When the insects died or became unduly soiled or injured they were replaced by others. Two 200 cc. beakers filled with wet horse manure were placed in each cage for the flies to oviposit on. In the course of two days hundreds of eggs were deposited on the medium. Every day the beakers containing eggs and larvae were removed. Other beakers filled with fresh horse manure, to which about 15 cc. of water had been added, were then placed in the breeding cages. In this way fresh medium was kept in the breeding cages continually for the flies to oviposit on. It appears that this part of the technic stimulated the responses of the females in regard to oviposition and aided some-





View of the interior of the Peet-Grady Chamber, showing temperature and humidity control, and large pipe at top for rapid exhausting following each test.



Exterior View of the standard Peet-Grady Chamber, which is a six foot cube.



what in keeping the flies from laying eggs on the adult food, i.e., the sweetened bread.

To insure a large supply of adults, several cultures were started each day. About five or six hundred eggs and larvae, obtained as above, were transferred to each of the rearing jars. Each jar was filled to about the three-fourths mark with fresh, loosely packed horse manure. It was found that if about 200 cc. of water was added to the manure when the culture was started it was sufficient to keep the medium in a moist condition until the adults emerged. The losses resulting from larvae drowning were insignificant. To this 75 cc. of the supplementary food, yeast cells suspended in water, was added and about 10 cc. more was dropped in the jars every other day until the larvae were about ready to pupate. The amount of yeast to be fed varies, of course, with the number of larvae to be reared. It was found that in this case if the amount of yeast suspension was cut down the adults, if they emerged, were apt to be stunted and possess little vitality.

In making up the yeast suspension Glaser advises, "In practice we dissolve a one pound bakery cake of commercial yeast in two liters of water. The suspension of yeast cells is then distributed in pint bottles and autoclaved, to kill fungi which often cause trouble, and stored on ice." We have found that if one pound of yeast is dissolved in two and one half or three liters of water, very good results can be obtained. At first the yeast suspension was autoclaved using pint milk bottles as receptacles. A pyrex flask was later substituted for the milk bottles as these are apt to crack when subjected to high temperatures a few times. A number of cultures were reared using yeast suspension which was not autoclaved. While this part of the technic may be left out, with little or no difference in the results, it is advisable to sterilize the yeast suspension if an autoclave is available.

The horse manure containing eggs and larvae was then emptied onto the fresh medium, the covers fitted on the jars and the culture was incubated at 85° F. The larval medium settled in a few days to about the middle of the jar which gave the adults plenty of room to move about when they emerged.

At this temperature the time required from egg to adult was approximately eleven days. Some of the adults emerged nine days after being placed in the rearing jars and the rest within eleven days. As the flies emerged they were transferred from the rearing jars as previously described and either placed in a stock cage to be held for insecticidal tests or used for breeding purposes. It is advisable to take the flies out of the rearing jars soon after they emerge so as to avoid overcrowding. When large numbers of adults are allowed to stay in the rearing jars they are apt to become excited and mill about the top of the jars in an effort to escape. This often results in a high mortality.

To draw any conclusions from insecticidal tests which would shed light on the toxicity of a compound, the age and the condition of the insects used should be known. This appears to be particularly true of flies. We have found that the adult house fly bred under artificial conditions during the winter months is most active and resistant when it is four to five days old. In comparing results of insecticidal tests run during the summer with wild flies and those reared artificially it developed that winter flies, four or five days old, were more uniformly resistant to toxic compounds than wild summer flies and fully as resistant as controlled cultures developed during the summer. *As the age of the flies was of great importance they were kept in separate cages dependent on the date they emerged.*

After the fifth day flies which had not been used for insecticidal tests or transferred to the breeding cages

## THE OIL SPECIFICATION

The Pennsylvania oil, adopted as standard by the National Association of Insecticide & Disinfectant Manufacturers for testing the relative resistance of flies bred in one laboratory as compared with those bred in another, shall have the specifications as listed below:

A. P. I. Gravity.....	49-50
Flash Point.....	Above 120 F.
Initial Boiling Point.....	Above 350 F.
End Point.....	Not Above 510 F.
Saybolt Color.....	30 Plus
Odor .....	Slight
Iodine Number, Hanus.....	Below 1

Such an oil when used without additions by the Peet-Grady Method against house flies should not give more than 20% down and 6% kill. House flies showing these average results shall be considered to have standard resistance to the action of liquid spray insecticides.

were killed. The cage was then thoroughly washed with soap and water and dried. As the adults were continually emerging in the rearing jars it was necessary to use the cage immediately for a new supply. In this way a continuous cycle was maintained with a minimum number of cages.

When flies were needed for insecticidal tests, the stock cage was taken to the testing chamber, the slide was raised slightly until the desired number of insects had escaped into the chamber, the slide was then lowered and the door of the chamber was closed.

### Observations

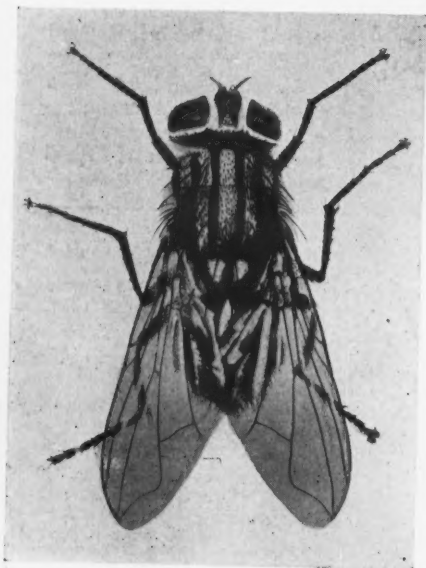
A FEW observations on the activity and longevity of the adults during the winter months were made. It was found that the adult fly was very active and resistant until about the eighth day after it emerged, reaching what might be called its peak of activity and resistance about the fifth day. The longevity of the adult varied from two to thirty-three days with an arithmetical mean of thirteen plus days. It was also noted that the ovaries and testes developed rapidly and in some cases eggs were deposited by the flies in a little over three days after the time of emergence. Some investigators<sup>2</sup> have reported that the life of the adult house fly, reared during the warmer seasons, averages approximately twenty days and that the time required for the development of the ovaries and testes was longer by several days than observed in this case. Whether this comparatively short life cycle and rapid development was due to the fact that the flies were continually subjected to a constant temperature of 85° F., a special diet, absence of direct sunlight, or to other factors was not determined.

### General Testing Considerations

ALTHOUGH a vast amount of work has been done on examining various compounds to determine their value as insecticides, the variations in the methods

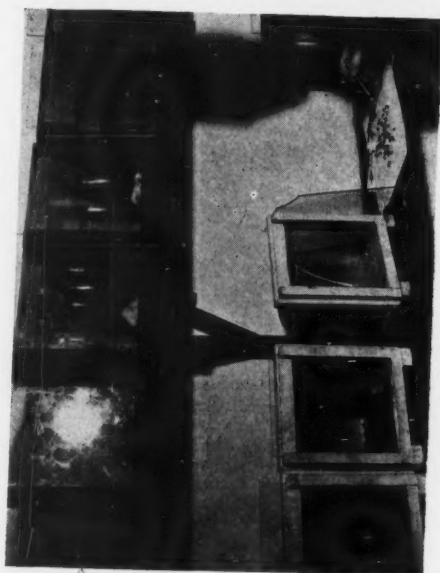
<sup>2</sup> Howard, House Flies, U. S. Dept. Agri. Farmers' Bulletin, 679, 9115; Glaser, Rearing Flies for Exp. Purposes with Biological Notes, J. Econ. Ent., 1924, XVII, 486-496.

Below—Appearance of the floor of the Peet-Grady Chamber ten minutes after spraying. These flies are carefully taken up and kept in an observation cage for 24 hours.



The Common House Fly, *Musca Domestica*.

Below—24 hours after the test, the "deads" in the observation cage are counted. They should show a minimum of 60%.



of testing these compounds and in the standards set up by the various investigators have made it almost impossible to draw valid comparisons between the results reported. In some cases insects have been tested by exposing them to the fumes of the particular compound being tested even though the compounds were relatively non-volatile and had to be heated in order to volatilize them. In others the compound being studied was dissolved in some oil carrier and dispersed by spraying. Still other determinations of insecticidal effectiveness have been made by completely immersing the insect to be tested in the material under consideration either at 100% concentration or at various dilutions. Obviously there is almost no common ground between these methods of testing. The desirability, however, of formulating some uniform testing procedure is evident and it is hoped that this paper will serve to stimulate other investigators to work upon this problem and to offer such alterations and improvements in technique as may seem desirable.

The most common pest the world over is the fly and the economic significance of the various species of stable flies is so well appreciated that a large program of research upon its control is being undertaken by the government. The annoyances caused by the house fly as well as the danger of infection due to its presence are pointed out in the advertisements of every magazine. The smaller and generally less prevalent fruit flies, gnats, etc., constitute a special problem in certain localities. Accordingly this paper deals specifically with methods of determining the effectiveness of compounds against flies. There is, of course, a great variation in the resistance of the different families of flies to the action of insecticides, but the relative resistance of these various families follows approximately the same curve against all insecticidal compounds. Accordingly, once that curve has been established for all the families, which are sufficiently common to constitute pests, it is only necessary, in testing a new compound, to test it against one or two families in order to locate the curve of its efficiency. This paper makes no attempt to establish these curves but serves solely to point out a method of testing which is applicable to all families of flies.

The determination of toxicity against insects must be a purely biological test and, like all biological tests, it is subject to the very considerable variability which accompanies the reaction of the living organism to external effects and influences. This variability is innate in all creatures and cannot be controlled but the superficial variables which have heretofore been ignored, or too little considered, can be so accurately controlled that only the biological variable remains to remove such tests from strict reproducibility and the average will be just as certain as life insurance mortality tables.

The variables which this investigation has shown to possess the greatest significance are: time, temperature, humidity, insecticide concentration, carrier, fineness of spray, air conditions, angle of spray and condition of insect.

It is obvious that it is unfair to draw a comparison between two insecticidal compounds one of which is allowed to work upon the insect for twice as long a time as the other.

The importance of temperature control may easily be demonstrated by exposing two groups of insects from the same brood to the same insecticide at say 60° F. and 85° F. The higher percentage kill among the insects in the warmer chamber will be quickly appreciated.

The influence of humidity on the resistance of the insect to toxic compounds has been generally ignored in testing for insecticidal power. It does not have as great an effect as the temperature differential but it should be considered.

The fact that a higher concentration of material being tested in any given solution should produce a greater or more rapid kill does not require discussion.

The variations in effectiveness produced by variations in spray concentration are less easily demonstrable but undoubtedly just as certain for if the spray or vapor of any material under consideration be more attenuated in one instance than in another, there must be a higher concentration of insecticide in the area which has the greatest spray concentration.

*Few carriers are inert but many studies have shown that there is a very considerable difference between the toxicity of these numerous relatively inert solvents.<sup>3</sup> Accordingly, if one investigator reports on an insecticide using as a carrier a certain fraction of Pennsylvania Oil, another on the same material using a corresponding fraction of California Oil, there will be a disagreement. Similarly if one investigator uses a certain fraction of Pennsylvania Oil and another a different fraction of the same oil, they will obtain different results.*

Griffin, Richardson and Burdette<sup>4</sup> have shown that the size droplet produced by a sprayer has a very marked effect upon the insecticidal activity of the same material. Droplets of 5 to 10  $\mu$  produce about the maximum effect whereas droplets of 2  $\mu$  and smaller decrease the activity of the insecticide. These conclusions were based upon a study of contact sprays and insofar as the insecticide serves as a contact poison, they will apply to it. If, on the other hand, the insecticide functions in the vapor phase, the rate of evaporation will increase as the droplet size decreases and the reverse conclusion must be drawn. There are two ways of producing these variations in droplet size. One is by changing the type of atomizer or spray and the other by changing the pressure on the same sprayer. Since it is probable that the majority of tests will be made using the same sprayer, the variable which must be controlled is pressure.

By air conditions is meant whether the air is fresh or exhausted but this factor can probably be ignored because the chamber is always aired between tests.

The importance of the angle of the spray is closely related to spray concentration. If the spray enters the chamber from all directions there is much more uniform dispersion of the material under study. Also, of course, this factor is of importance if the spray comes in contact with the insects. If the material being examined is heavy and is sprayed downward upon the fly it is possible that its wings will shield its body or perhaps it would be more correct to say that if the spray were directed upward against the fly there would be greater likelihood of its coming in contact with the more vital parts of the insect.

*Condition of the insect is one of the most important factors to be considered. It requires no elaboration to point out that an old fly or a vitiated fly or a very young fly or a fly in any way enfeebled will be more susceptible to the action of any toxic material than will a strong healthy individual.*

The method of testing which this paper wishes to advocate is as follows:

**Chamber:** All fly tests should be carried out under conditions which at least approximate those existing in the fly's normal environment and for this purpose a chamber of sufficient size to enable the fly to move about freely and approximately as unrestrictedly as it normally would should be provided. A very satisfactory size has been found to be a 6 x 6 x 6 foot cube. In

<sup>3</sup> Moore & Graham. A study of the Toxicity of Kerosene, Jour. Econ. Ent., 1918, XI, 70-75.

<sup>4</sup> Griffin, Richardson & Burdette. Relation of Size of Oil Drops to Toxicity of Petroleum-Oil Emulsions to Aphids. Jour. of Agri. Research, Vol. 34, Pages 727-738.

the studies upon which this paper is based, this chamber was made of wood with the bracing members on the outside, leaving the inside as free from projections, corners, ledges, etc., as possible. The inner surfaces were originally well painted with white enamel in order to prevent absorption, by the wood, of material being tested. This paint, however, adsorbed and absorbed a certain proportion of the oily materials being studied and, although it was carefully wiped out after each test, it was impossible to remove all traces of the preceding materials. Accordingly, the inside, including floor and ceiling, was lined with transite board, an asbestos composition, all corners were sealed with a Silix-sodium silicate cement and the walls were rendered as nearly non-absorbent to oils as possible by painting with sodium silicate. In the center of the ceiling a glass window was set with a light bulb above it for illumination. A tight closing door, large enough for a man to enter, was set in one wall and the adjoining walls were provided with glass windows in the center of each. These same walls each had four square ports 6 x 6 inches covered with wire gauze and provided with tight fitting hatches. Each wall had two one-half inch holes bored through it six inches from the ceiling and closed by corks.

**Procedure:** Each test was run upon a considerable number of flies, 5 days of age, never less than 100 and usually rather more but not exceeding about one per cubic foot. These were liberated in the chamber, which was kept at 85° F., and the insecticide was introduced through the one-half inch holes along the ceiling by means of a modified Devilbiss atomizer No. 152 with No. 631 cut-off.

The modification consisted in replacing the reservoir of the atomizer by a narrow 20 cc. cylinder made by cutting off an ordinary burette and sealing one end and in substituting a sufficiently long outlet tube to reach practically to the bottom of the cylinder, for the shorter one which is standard equipment.

By filling the atomizer above the lower end of the outlet tube and spraying until no more spray is delivered when the burette tube is in a vertical position, the zero point of the graduated atomizer is determined. If 12 cc. of insecticide is now added above this zero figure, the atomizer will deliver exactly 12 cc. before it returns to its zero and ceases to deliver. The accuracy of this equipment is about 0.1 cc.

This atomizer was operated at 12½ pounds pressure from a constant pressure airline controlled by a Hoke

reducing valve. The amount of solution used in each test was 12 cc. and this was sprayed in about equal quantities through each top hole. The door and all ports were, of course, tightly closed during this procedure. The chamber was kept closed for ten minutes, during which time observations on the flies could be made through the windows to study the manner in which the material being tested was affecting them. At the end of ten minutes the square ports were all opened, a Buffalo exhaust fan turned on, and the number of flies still clinging to the walls and ceiling was counted through the side windows. The flies which had dropped were carefully gathered up and transferred to clean observation cages in which food and cotton gauze soaked in water had been placed. These cages had wooden bases 6 inches square, wire gauze back and sides and a sliding glass front.

It was considered that the flies still off the floor had escaped the action of the insecticide. The flies in their gauze cages were kept for twenty-four hours to observe whether there was ultimate recovery or death. At the end of this period, these insects were counted and the number still alive added to those which had been on the walls on the chamber. The Buffalo exhaust fan swept out the chamber by sucking air through it and afterward the floor and walls were thoroughly wiped off with an absorbent cloth.

The number of flies still off the floor at the end of the ten minute period divided by the total number liberated in the chamber gives the "knock-down in 10 minutes." The number lying dead in the observation cages after 24 hours divided by the total number originally taken gives the "percentage kill."

The variables thus far held in control are time, temperature, spray concentrations, pressure in spray, air conditions, angle of spray, and kind of insect. The condition of the insect is more particularly dependent upon how it has been bred and this phase of the problem is discussed in the first part of this paper.

Tests conducted following this procedure show a low average variation and it is entirely reasonable to presume that any investigator could obtain very uniform results following the method.

[The helpful criticism of Dr. W. S. Abbott of the U. S. Dept. of Agriculture and the suggestions embodied in the papers of Dr. R. W. Glaser of the Rockefeller Institute for Medical Research as well as his personal assistance were invaluable in the inauguration of this work.]



# Testing Antiseptics and Disinfectants

## Methods Prescribed for Use in Enforcement of the Insecticide Act of 1910

By G. L. A. RUEHLE and C. M. BREWER

*Insecticide Control, Food & Drug Administration*

ALL antiseptics and disinfectants shipped or offered for shipment in interstate commerce or offered for import into or export from the United States are subject to the provisions of the Federal insecticide act, the Federal food and drugs act, or both. In the enforcement of these acts it is necessary to determine the accuracy of the bactericidal and antiseptic claims made for such products. A number of methods have been developed for determining bactericidal effectiveness, but all of them possess certain disadvantages. Of course it is impossible to devise tests which will apply in all cases, but during the past 20 years the Insecticide and Fungicide Board and the Food and Drug Administration have found certain methods to be particularly well adapted to their purposes.

Confusion has arisen from the fact that, in many cases, manufacturers have not used the same methods of testing their products, as a basis for preparing their labels, as those used by the administration. This possibility of misunderstanding would be obviated if the same methods were employed by all, and many manufacturers, recognizing this, have requested information as to methods employed by the Food and Drug Administration. In view of this, it seemed desirable to publish them in a form which would make them generally available.

This circular, therefore, describes briefly the methods usually employed in the insecticide control laboratory for testing official samples of antiseptics and disinfectants. No attempt is made to review the literature of disinfectant testing in detail, but the most important papers relating to the methods here presented are cited.

### Determination of Phenol Coefficient<sup>1</sup>

There are in general use at the present time three methods of determining the phenol coefficient; the Hygienic Laboratory (H. L.) method (11)<sup>2</sup>, that of Rideal-Walker (R-W) (7), and the method developed by this laboratory. It had been realized for a long time, especially among qualified workers in the field of phenol coefficient testing, that there were numerous handicaps and minor deficiencies to be encountered in the routine manipulation of both the H. L. and R-W methods. Lloyd P. Shippen, formerly bacteriologist of the Insecticide and Fungicide Board, after much experience in the testing of disinfectants, devised a method for obtaining phenol coefficients, utilizing as its basis the best features of the two older tests. Under pressure of a great volume of routine work this method was first put into practice more than 15 years ago, and found to be so satisfactory that it has come to be used for testing the

great majority of the germicides now received at the Food and Drug Administration.

George F. Reddish, successor to Doctor Shippen, later published this method under the name, "The R-W modified method" (5).

The procedure of Shippen has been little changed, but the standards for the resistance of the test organisms, *Eberthella typhi* (Schröter) Buchanan,<sup>2</sup> and *Staphylococcus aureus* Rosenbach, have been firmly established and provisions for the use of other organisms have been added. The method, as here published, is designated the "Food and Drug Administration phenol coefficient method" or briefly, the "F. D. A. method."

The differences in the three methods are shown in Table I. (See Next Page.)

There need be very little confusion arising from substituting the F. D. A. method as a test for products previously tested by either the R-W or the H. L. methods. The phenol coefficients of the large number of substances chemically related to phenol (the only type of disinfectants for which the H. L. method is accepted) (11) are, in most cases, practically the same, whether tested by the F. D. A. or the H. L. method. Not only has continued use of the method in this laboratory shown this to be true (2), but collaborative experiments in five other laboratories (unpublished) confirm this fact. In comparing this method with the R-W method, similar results in general are obtained, although a somewhat lower coefficient usually results with coal-tar products having high coefficients. However, the higher results sometimes obtained by the R-W method may be misleading. R-W broth is not well adapted for the optimum growth of the test organism; hence nega-

<sup>1</sup> For the benefit of those unfamiliar with testing disinfectants a brief statement of the principles of determining phenol coefficients is made. The phenol coefficient is a figure expressing the ratio of the killing efficiency of a disinfectant as compared with that of phenol tested under identical conditions. The sample to be tested is diluted and the dilutions arranged in a series of decreasing concentrations (increasing dilutions). To these a specified amount of the test organism if broth culture is added. At the end of fixed periods of time a small portion of the mixture of diluted disinfectant and test organism is transferred to a nutrient culture medium and incubated. No growth in the subculture indicates that the organism has been killed. The greatest dilution (weakest concentration) of the disinfectant killing in a definite time period is divided by the greatest dilution of phenol killing in the same time period. This ratio is the phenol coefficient. It should be noted that the phenol coefficient is not based on a comparison of different time intervals but on a comparison of different concentrations acting for specified time periods.

<sup>2</sup> Italic numbers in parentheses refer to Literature Cited. Page 166.

<sup>3</sup> Throughout this paper the term *Eberthella typhi* is used for *Bacillus typhosus*, in accordance with the nomenclature adopted by the committee on classification of the Society of American Bacteriologists (1).

TABLE 1.—Differences in media and manipulation of the three methods of determining phenol coefficient.

Item	F. D. A. method	R-W method	H. L. method
Composition of medium—	Peptone <sup>1</sup> , 10 gm. _____ Liebig's beef extract, 5 gm. _____ Salt, 5 gm. _____ Water, 1,000 c. c. _____ Boil 20 minutes. _____	Peptone <sup>2</sup> , 20 gm. _____ Liebig's beef extract, 10 gm. _____ Salt, 10 gm. _____ Water, 1,000 c. c. _____ Boil 30 minutes _____	Peptone <sup>1</sup> , 10 gm. _____ Liebig's beef extract, 3 gm. _____ Salt, 5 gm. _____ Water, 1,000 c. c. _____ Boil 15 minutes. _____
Acidity of medium—	pH 6.8 _____	+1.5. No definite pH. _____	Unadjusted but pH between 6.0 and 7.0.
Amount of culture medium in tube.	10 c. c. _____	5 c. c. _____	10 c. c.
Amount of culture added to diluted disinfectant.	0.5 c. c. to 5.0 c. c. _____	0.5 c. c. to 5.0 c. c. _____	0.1 c. c. to 5.0 c. c.
Resistance of test culture to phenol (dilutions killing in 10 minutes but not in 5 minutes).	1-90 _____	1-90 to 1-110 _____	No limits stated.
Condition of tube in test—	Plugged with cotton _____	Plugged with cotton _____	Open tubes.
Temperature of test—	20° C. _____	15-18° C. _____	20° C.
Time intervals of the test—	5, 10, and 15 minutes. _____	2½, 5, 7½, and 10 minutes _____	5, 7½, 10, 12½, and 15 minutes.
Amount of medication mixture transferred (size of loop).	4 mm. loop (of No. 23 B. and S. gage wire).	4 mm. loop (of No. 27 Imperial gage wire).	Spiral loop (four spirals wrapped around a No. 13 B. and S. gage wire. Made of No. 23 B. and S. gage wire).
Calculation of phenol coefficient.	Highest dilution not killing in 5 minutes but killing in 10 minutes divided by same for phenol.	Highest dilution not killing in 5 minutes but killing in 7½ minutes divided by same for phenol.	Mathematical mean of highest dilutions showing no growth in 5, 10, and 15 minutes divided by same for phenol.

<sup>1</sup> Armour's. Special batch set aside for disinfectant testing.<sup>2</sup> Allen and Hanbury's.

tive subcultures frequently indicate that the organism has been killed, when in fact it may have been only rendered incapable of growing in this culture medium.

The curtailment in labor, time, and material through the use of the F. D. A. method renders it particularly valuable where a large number of samples are involved. The F. D. A. method is considerably superior to the R-W method in producing consistent results (4, 12). The medium employed is better adapted to bacterial growth, and the technic is not restricted to the use of one test organism (*Eberthella typhi*) as is the case of the R-W and H. L. methods. Moreover, the stock cultures of *E. typhi* and *Staphylococcus aureus*, the organisms principally used in germicidal testing, remain sufficiently constant in their resistance to phenol, when grown on an adjusted medium, to necessitate but one phenol control, though two controls are used frequently as an additional check. This allows the use of nine dilutions of the unknown with 30-second intervals between transfers, or 14 when 20-second intervals are used. With a little practice, 20-second intervals allow sufficient time.

The F. D. A. method will be used by this laboratory in determining the dilutions at which miscible coal-tar disinfectants, and many other products to which the method is applicable, should be used for disinfecting purposes. As heretofore, this dilution should be at least equal in strength to a 5 per cent solution of phenol when tested against *Eberthella typhi* (20 times the phenol coefficient figure) and should be based on a phenol coefficient not higher than that obtained by the F. D. A. method.

### Food and Drug Administration Method

THE test organism is a 22-26 hour culture of *Eberthella typhi* (Hopkins strain) incubated and grown in nutrient broth at 37° C. The broth contains the following ingredients: 5 gm. of Liebig's beef extract, 5 gm. of chemically pure sodium chloride, and 10 gm. of Armour's peptone (for disinfectant testing) in 1,000 c. c. of distilled water. The mixture is boiled for 20 minutes, made up to original weight (or volume) with distilled water, and adjusted with NaOH to pH 6.8 using the colorimetric method (3, p. 405-421.) It is then filtered through paper, tubed (10 c. c. to each tube), and the tubes plugged with cotton and sterilized at 15 pounds pressure for 40 minutes. The test culture is transferred daily in this medium for not more than one month. At the end of each month, a fresh transfer is made from the stock culture. The stock culture is carried on agar slants of the same composition as the broth medium plus 1½ per cent Bacto-Agar (Difco), adjusted to pH 7.2 to 7.4. This medium is also filtered, tubed, plugged with cotton, sterilized, and slanted. The stock culture is transferred once a month, and the test organism is taken from the month-old stock culture. When the test organism has not been transferred daily, it is advisable to make four or five consecutive daily transfers in broth before using it for testing purposes, to be reasonably sure of its conforming to the phenol resistance requirements. When only one transfer has been skipped the following transfer from the 48-hour culture is usually satisfactory for use after 24 hours.



Transfers are made with the platinum loop used in the test. Only cultures giving readings within the following limits are considered satisfactory:

Phenol:	5 minutes	10 minutes	15 minutes
1-90 .....	+	+	0
1-100 .....	+	+	+
or			
1-90 .....	0	0	0
1-100 .....	+	+	0

The following reading is that most usually obtained and is the most convenient:

Phenol:	5 minutes	10 minutes	15 minutes
1-90 .....	+	0	0
1-100 .....	+	+	+

### Phenol

The phenol used must meet the requirements of the United States Pharmacopoeia, and in addition the congealing point must not be below 40° C. A 5 per cent solution may be used as a stock solution if kept in a relatively cool place in well-stoppered amber-colored bottles protected from the light. This 5 per cent solution should be standardized with decinormal bromine (described under "phenol" (10, p. 283), or with sodium bromide and bromate solution (9, pp. 404-405).

### Apparatus

Besides a number of accurately graduated pipettes, 100-c. c. glass-stoppered graduates or volumetric flasks are almost essential for the making of correct dilutions. All pipettes and graduates should be standardized. The test tubes for containing the dilutions should be large enough to permit transfers being made without touching the sides with the transfer needle. Lipped pyrex (to withstand constant flaming) test tubes 25 by 150 mm. serve very well as these seeding or medication tubes. A water bath for holding the dilutions at the desired temperature must be provided. To maintain the temperature practically constant during the period of the test, the bath should be made so as to contain a relatively large volume per surface area, and should be insulated. The lid is made with well-spaced holes admitting the 25-mm. tube, but not the lip. The most convenient form of subculture tubes (tubes containing medium for incubating the tested organisms, as well as for growing the test culture) are ordinary non-lipped bacteriological test tubes 20 by 150 mm. The racks for holding the subculture tubes may be any convenient style. Blocks of wood with a series of holes bored in them are quite satisfactory. Dimensions depend somewhat on the size of the incubator, but the holes should be well spaced to insure quick selection and easy manipulation during the test. It is an added convenience to have the holes large enough to admit the medication tubes while dilutions are being made. The transfers are made with a 4-mm. (inside diameter) single loop of number 23 B. & S. gage platinum wire, 1½ to 3 inches long, set in a suitable holder such as an aluminum or glass rod approximately 0.5 cm. in diameter.

### Procedure

One per cent stock dilutions of the substance to be tested (or any other convenient dilution of the disinfectant, depending on the strength) are made up, usually in the glass-stoppered cylinders or volumetric flasks from which the individual dilutions are then prepared. For rapid routine work, the final dilutions may be made directly in the medication tubes. In this case all excess over 5 c. c. must be removed. For more precise work and when high dilutions are required or volatile sub-

stances are dealt with, it is preferable to make up all of the dilutions in volumetric flasks and then transfer 5 c. c. of the final dilution to the medication tubes. These tubes containing 5 c. c. of each dilution (including the phenol control) are placed in the water bath at 20° C. for five minutes until the temperature of the bath is reached. Even slight variations in temperature may affect the results. The dilutions should cover the range of the killing limits of the disinfectant within 5- and 15-minute periods and should at the same time be spaced sufficiently close together to insure the desired accuracy. Five-tenths of a cubic centimeter of the test culture is then added to each of the dilutions at a time interval corresponding to the interval at which the transfers are to be made. Thus by the time 10 tubes have been seeded at 30-second intervals, four and one-half minutes will have elapsed and a 30-second interval intervenes before the transference to the subcultures is commenced. The culture is added from a graduated pipette holding sufficient culture to seed all the tubes in any one set. The pipette may be loosely plugged with cotton at the mouth end before sterilizing, as a precautionary measure. Unfiltered culture is used, but it should be thoroughly shaken 15 minutes before use and allowed to settle. The temperature of the culture should be practically that of the water bath before being added.

In inoculating the medication tubes they should be held in a slanting position, after removal from the bath, and the culture run in without the tip of the pipette touching the disinfectant. The tip may be allowed to rest against the side of the tube just above the surface of the liquid. The tubes are agitated gently but thoroughly after the addition of the culture to insure even distribution of the bacteria. Five minutes from the time of seeding the first medication tube, transfer 1 loopful of the mixture of culture and diluted disinfectant from the medication tube to the corresponding subculture tube. To facilitate transfer of uniform drops of the medication mixture, the loop is bent to form a slight angle with the stem and the medication tube is held at an angle of 60°. In other words, as the loop is withdrawn, its plane should be parallel with the surface of the liquid. At the end of 30 seconds, a loopful is transferred from the second medication tube to the second subculture tube and the process continued for each successive dilution. Five minutes from the time of making the first transfer, a second set of transfers is begun for the 10-minute period and finally repeated for the 15-minute period. Before each transfer the loop is heated to red heat in the Bunsen flame and the mouth of every tube is flamed. Sterilization of the loop is effected immediately after making the previous transfer (before replugging the tubes) to allow time for sufficient cooling. Time does not permit flaming the tubes after making the transfer. For this reason, care in transferring and seeding is necessary. Due caution is observed to prevent either the seeding pipette or the transfer needle from touching the sides or mouth of the medication tube; neither should cotton threads be found adhering to the sides or mouth of these. After completion of the transferring, the subculture tubes are incubated at 37° C. for 48 hours and results read. Microscopic examination usually suffices for this, but occasionally agglutination with antityphoid serum will aid in reading doubtful results. A 3-day incubation period or agar streak or microscopic examination may be resorted to in determining feeble growth, especially when organisms other than *Eberthella typhi* are used.

There are certain types of germicidal agents, such as many of the mercury compounds, which give very high results by phenol coefficient tests (8). Due to the high inhibitory value of such substances in preventing growth

in the subcultures these figures are frequently misleading. For germicides used in the disinfection of such objects as surgical instruments, this is of particular importance and must be taken into account. Failure to appreciate this characteristic of certain compounds is much more likely to lead to error when *Staphylococcus aureus* is used rather than *Eberthella typhi* as the test organism. That false values may not be obtained for products of this type, or for any other disinfectant giving suspiciously high results, the subcultures should contain very large amounts of medium (not less than 200 c. c.) or they should be retransferred by carrying at least 4 loopfuls from the first subculture to a second tube of broth, as recommended by Shippen (8).

Other groups of disinfectants in common use, for which the phenol coefficient method of testing is not well adapted, are those compounds containing chlorine as the active agent as well as oxidizing agents in general. These are affected so materially by the presence of organic matter that a phenol coefficient statement may grossly misrepresent their value under practical conditions of use and is very apt to be misleading to the consumer when placed on the label.

### Calculation of Phenol Coefficient

THE results of the test are expressed in terms of the phenol coefficient. This represents the germicidal value of the diluted disinfectant as compared with the diluted phenol control. It is a figure obtained by dividing the numerical value of the greatest dilution (the denominator of the fraction expressing the dilution) of the disinfectant capable of killing *Eberthella typhi* in 10 minutes but not in 5 minutes, by the greatest dilution of phenol showing the same results; that is, by the phenol control. Thus, if the results were as follows:

Disinfectant (X):	5 minutes	10 minutes	15 minutes
1-300	0	0	0
1-325	+	0	0
1-350	+	0	0
1-375	+	+	0
1-400	+	+	+
Phenol:			
1-90	+	0	0
1-100	+	+	+

The phenol coefficient would be  $\frac{350}{90} = 3.89$ .

If none of the dilutions show growth in 5 minutes and killing in 10 minutes, the hypothetical dilution may be estimated in certain cases. This may be done only when any three consecutive dilutions show the following results:

The first, no growth in 5 minutes; the second, growth in 10 minutes but not in 15 minutes; and the third, growth in 15 minutes; for example:

If the results were as follows:

Disinfectant (X):	5 minutes	10 minutes	15 minutes
1-300	0	0	0
1-350	+	+	0
1-400	+	+	+
Phenol:			
1-90	0	0	0
1-100	+	+	0

the estimated phenol coefficient would be  $\frac{325}{95} = 3.42$ .

To avoid giving an impression of fictitious accuracy, the phenol coefficient is calculated to the nearest 0.1 unless the coefficient is less than 1.0. Thus, in the

examples cited above, the phenol coefficients would be reported as 3.9 and 3.4 instead of 3.89 and 3.42.

In the preceding description, *Eberthella typhi* has been mentioned as the test organism. Wherever any expression of phenol coefficient occurs in literature, on labels, etc., it is assumed to mean the *E. typhi* phenol coefficient, unless otherwise stated. It is, however, the distinct intention of this department not to limit the test to the use of one organism. In fact, the test has been found adaptable to the use of a wide variety of bacterial species in the determination of phenol coefficients. In cases where some of the more strictly parasitic bacteria are used, modifications in media are necessitated, and, of course, a change in the phenol dilutions. The writers are not in a position at this time to prescribe the limits of resistance for many of the organisms that might be used. Therefore discussion of the exact technic is here omitted, with the exception of that for *Staphylococcus aureus*. Suggestions for the use of certain representative types may, however, be found in a paper by Reddish (5). When any test organism other than *E. typhi* is used it should be distinctly designated when stating the phenol coefficient.

*S. aureus* has been found to be an extremely useful organism for testing disinfectants and antiseptics and has been used for this purpose for a number of years. When substituted in the above test the technic remains exactly the same. The phenol dilutions, however, must be changed. The resistance of any strain of *S. aureus* used in this test must come within the following limits: At 20° C. it must survive a 1-60 dilution of phenol for 5 minutes and a 1-70 dilution for 15 minutes. The following is the minimal resistance that would be acceptable:

	5 minutes	10 minutes	15 minutes
Phenol:			
1-60	+	0	0
1-70	+	+	+

In the bacteriological examination of disinfectants, the *Eberthella typhi* and the *S. aureus* phenol coefficients give, in general, sufficient information to render tests with other organisms unnecessary, except in special instances. The commonly accepted criterion that disinfectants for general use be employed at a dilution equivalent to the germicidal efficiency of 5 per cent phenol against *E. typhi* (that is, 20 times the *E. typhi* phenol coefficient) allows a reasonable margin of safety for the destruction of infective agents likely to be the object of general disinfection about premises with the possible exception of *Mycobacterium tuberculosis*. *S. aureus*, due to its ubiquity, resistance and ever-ready tendency to cause infection, should always be employed in testing those substances recommended for personal use or as applications for wounds. If the disinfectant is recommended for use externally the temperature of test should be 20° C., but where such substances are recommended for use in the body cavities, such as for mouth washes, gargles, douches, etc., this test should be conducted at 37°. In such case the test should be designated "The F. D. A. method (special) *S. aureus*, 37° C." At body temperature the *S. aureus* should show the following resistance to phenol:

	5 minutes	10 minutes	15 minutes
1-80	+	0	0
1-90	+	+	+
Or			
	5 minutes	10 minutes	15 minutes
1-80	+	0	0
1-90	+	+	0

The previous description of this method (5) differed from this only in allowing a slightly wider latitude in the resistance of the test organism against phenol.

### Other Tests for Germicides\*

THE limitations of the phenol coefficient make it necessary in some cases to judge the germicidal preparation by other tests or by additional tests. This is particularly true of preparations that are not completely soluble or miscible in water. It is also true of certain preparations designated as antiseptics.

Soluble antiseptics or antiseptics completely miscible with water can be tested, of course, by the procedure already described as the F. D. A. *Staphylococcus aureus* phenol coefficient method. In the testing of these substances, however, the phenol coefficient is not obtained necessarily, the phenol figure being used merely as a check of the resistance of the test organism. The information desired is the concentration which will kill in five minutes.

In an effort to simulate practical conditions, it is frequently advisable to conduct the tests in the presence of blood serum. Sterile horse serum in a concentration of 10 per cent is ordinarily used, both in the germicidal and inhibitory tests. Special claims and uses of a product, however, frequently indicate the desirability of a higher concentration of this organic enrichment.

The following methods designed for the testing of insoluble and immiscible products are in use in this laboratory at the present time. Some of them have been used for years and have been described previously (6). Laboratory tests, of course, cannot duplicate the exact conditions found in practice. The procedures here outlined, however, are as close an approach to practical conditions as is feasible in routine laboratory tests, and reveal the obviously useless preparations. It should be noted that inhibitory tests are considered along with other facts in interpreting whether or not the substance will be of value in practical use. It must be remembered that not only bacteriological but physiological and pharmacological facts frequently must be taken into consideration in judging many substances.

### The Wet Filter-Paper Method

The wet filter-paper method is a germicidal test rather than a test of inhibitory properties. It is used when the substance to be tested is not soluble or completely miscible with water, or for substances that are to be used in high concentration, such as soaps, tooth pastes, suppositories, dyes, dusting powders, salves, and ointments. If the substance is to be used in the body cavities the test is carried out at 37° C.; if not, the test is carried out at 20°, or at room temperatures, and the temperature is recorded.

No. 2 Whatman filter paper is cut into pieces about 0.5 cm. square, and sterilized in a plugged test tube at temperatures below 170° C. to prevent charring. A suitable number of the paper squares are then impregnated with *Staphylococcus aureus*, or other test organisms, by immersion in a 24-hour broth culture of the organism. The culture must have the standard resistance required for phenol coefficient testing. The wet inoculated squares are then placed in the liquid or solid substance to be tested in such a way as to be completely covered and in intimate contact. At the end of 5 minutes, 10 minutes, 15 minutes, or 1 hour, or any

\*According to current usage the word "antiseptic" has two meanings; to kill bacteria or to prevent their growth, depending upon the use of the product. Products such as salves, ointments, and dressings that remain in contact with the body for long periods of time, may be designated properly as antiseptics if they inhibit the growth of bacteria. On the other hand, mouth washes, douches, gargles, and preparations of like nature are in contact with the body for but brief periods of time and exert negligible inhibitory action. These may be described properly as antiseptics only if they will destroy bacteria under the conditions of use; that is, in the dilutions recommended and in a period of time comparable to that in which they would have an opportunity to act when used as directed.

other desired length of time, the wet papers are removed with a sterilized, stiff, platinum wire bent at a sharp angle to form a hook and placed in 10 c. c. of sterile broth. After as much of the disinfectant as possible has been removed (in the case of sticky substances, the needle must be used to aid in freeing the squares of adherent germicide) the squares are retransferred to a fresh tube of sterile broth (10 c. c.) and the tubes incubated at 37° for 48 hours, when they are observed for evidence of growth.

It will be noted that in this test resubcultures are always required, since the first tube of broth to which the filter-paper squares have been added frequently contains sufficient antiseptic to exhibit inhibition of growth. Both tubes of broth are usually incubated.

### The Dry Filter-Paper Method

The dry filter-paper method is used in tests of fumigants and of oils that are to be used where moisture is absent. It is similar to the wet filter-paper test, squares of paper being used that have been impregnated as described under the test above, except the squares are dried for two days in a sterile Petri dish in the 37° C. incubator. This test can be used successfully only with organisms capable of resisting the drying. *Eberthella typhi* will not withstand the drying. In the writers' work *Staphylococcus aureus* is the usual test organism. The inoculated dried paper squares may be used at any time after drying up to 30 days, but the resistance of the organism at no time should fall so low that it is incapable of withstanding a 1-80 dilution of phenol for five minutes at 20°. It should be noted that control tests with non-medicated squares should always be carried out to test the viability of the test organism. As in the wet filter-paper method, resubcultures are always necessary.

### The Agar-Plate Method

The agar-plate method is a test for inhibitory properties and is used for substances remaining in contact, with the body in the absence of serous body fluids. Examples of substances which may be tested by this method are salves, dusting powders, creams, plasters, pads, adhesive tape, catgut, and suppositories. The test organism ordinarily used is *Staphylococcus aureus*, but for special purposes the test may be used with any organism capable of growing on agar. The agar is of the same composition as that previously described for carrying stock cultures of the test organism.

Fifteen to twenty cubic centimeters of agar is melted and cooled to 42°-45° C. To this is added 0.1 c. c. of a 24-hour broth culture of the test organism. The inoculated agar is then poured into sterile Petri plate and allowed to harden. As soon as the agar has hardened, the test substance is placed in intimate contact with the surface of the agar. If a salve, it is first warmed just sufficiently to soften it and thus secure a complete peripheral contact. As a control, warmed sterile petrolatum may be placed on another portion of the plate. The plates are incubated 24-48 hours under unglazed porcelain tops at 37° C. and then are examined for evidence of inhibition. If the preparation is antiseptic or inhibitory, a zone of clear agar will be noted around the place where the substance has been in contact and the width of the zone will indicate the diffusibility of the inhibitory (antiseptic) agent. If there is no inhibition, growth of the test organism will be observed adjacent to and even under the test substance.

### The Serum Agar-Plate Method

Preparations recommended for use on open wounds, cuts, etc., will be effective only if they exhibit activity in the presence of serous fluids. In testing such preparations the agar-plate method is modified by the addition of 10 per cent sterile horse serum to the agar.

### The Agar Cup-Plate Method<sup>5</sup>

The agar cup-plate method is merely a variation of the agar-plate method. It is to be used on products liquid at the temperature of the test. The agar or serum agar is inoculated as in the agar-plate method. Before the agar cools, a depression or cup is made in the medium by standing a sterile flat-bottomed glass tube, 1.5 cm. in diameter, in the liquefied agar. On hardening, the glass tube is removed by slightly twisting and pulling at the same time. Insertion of a sterile wire down the side of the tube for the introduction of air will eliminate much of the cracking of the agar. Another method of preparing the agar cup-plate is to allow the medium to harden and then cut out a disk in the agar, by means of a cork borer, 1.5 cm. in diameter. One or two drops of melted agar are placed in the cup to seal cracks or crevices. After the agar cup-plate is prepared, 6 drops of the liquid to be tested are placed in the cup and the plate incubated under an unglazed porcelain top for 24 to 48 hours. If there is a clear zone about the cup, the substance under test has inhibitory properties. Here, as well as in the agar-plate test, the agar in the clear zone may be tested for growth by subculture in broth to indicate whether the action is germicidal or merely inhibitory.

### Tests in the Presence of Organic Matter

In general, the tests outlined above will take care of the bulk of the preparations coming to this laboratory. However, special tests may be required to determine the value of products recommended for certain purposes. For instance, recommendations on the label may make advisable the use of various additions of organic matter, such as increased amounts of peptone or the addition of gelatin, blood, ascitic fluid, saliva, urine, or feces, depending upon the information desired.

### Method Applicable in a Given Case

Substance	Method Applicable	Substance	Method Applicable
<b>Soluble disinfectants:</b>		<b>Soluble and concentrated antiseptics:</b>	
A. Preparations for general use.	Phenol coefficient — <i>E. typhi</i> at 20° C.	A. Preparations remaining on site of application (dusting powders, ointments, salves, suppositories, plasters, dressings, etc.)	Agar plate.
B. Preparations for antiseptic use.	Phenol coefficient technic — <i>S. aureus</i> 20° C. or 37° C. as indicated.	B. Preparations remaining on site of application but claiming germicidal properties.	Wet filter paper— <i>S. aureus</i> 37° C. Extension of time may be indicated.
C. Preparations for surgical instruments.	Phenol coefficient technic — <i>S. aureus</i> 20° C.	C. Preparations for use on open wounds, etc.	Serum agar plate.
<b>Insoluble and concentrated disinfectants:</b>		<b>Antiseptic materials, appliances, etc.:</b>	
A. Preparations for general use (oils, tarry substances, powders, lime, etc.).	Wet filter paper— <i>E. typhi</i> and <i>S. aureus</i> . Room temperature.	A. Bandages, dressings, catgut, etc.	Serum agar plate.
B. Preparations for use on dry surfaces (spraying oils, sweeping compounds, powders, lime).	Dried filter paper— <i>S. aureus</i> . Room temperature.	B. Tape, pads, etc.	Agar plate.
C. Preparations for fumigation (filter paper and exposed to gas in confined space).	Wet filter paper— <i>E. typhi</i> and <i>S. aureus</i> ; room temperature. Dried filter paper— <i>S. aureus</i> ; room temperature. (Extension of time may be indicated.).	<b>Solid and semisolid antiseptics:</b>	
<b>Soluble and liquid antiseptics:</b>		A. Preparations used for a short time (soaps, soap powders, tooth pastes, tooth powders, etc.).	Wet filter paper— <i>S. aureus</i> 20° C. or 37° C. as indicated. (Note: Undiluted and diluted with equal parts water or diluted with sufficient water to form a thick paste or heavy emulsion.)
A. Preparations to be applied for a short time (washes, mouth washes, gargles, douches, etc.).	Phenol coefficient technic — <i>S. aureus</i> 20° C. or 37° C. as indicated.		

#### Substance

#### Method Applicable

B. Preparations for use on open wounds, etc. (washes).

Phenol coefficient technic — *S. aureus* 20° C. or 37° C. as indicated. (Tested in presence of 10 per cent serum.)

C. Preparations remaining on site of application (dyes, wet dressings, rubbing preparations, etc.).

Agar cup-plate.

D. Preparations for use on open wounds, etc. (dyes, wet dressings, etc.).

Serum agar cup-plate.

E. Preparations remaining on site of application but claiming germicidal properties.

Wet filter paper—*S. aureus* 37° C. Extension of time may be indicated.

Solid soluble antiseptics:  
A. Lozenges, tablets, etc.

Wet filter paper—*S. aureus* 20° C. or 37° C. as indicated. Note: Saturated aqueous solution or in dilution indicated.

Insoluble and concentrated antiseptics:

A. Preparations remaining on site of application (dusting powders, ointments, salves, suppositories, plasters, dressings, etc.)

Agar plate.

B. Preparations remaining on site of application but claiming germicidal properties.

Wet filter paper—*S. aureus* 37° C. Extension of time may be indicated.

C. Preparations for use on open wounds, etc.

Serum agar plate.

Antiseptic materials, appliances, etc.:

A. Bandages, dressings, catgut, etc.  
B. Tape, pads, etc.

Serum agar plate.

Agar plate.

Solid and semisolid antiseptics:

A. Preparations used for a short time (soaps, soap powders, tooth pastes, tooth powders, etc.).

Wet filter paper—*S. aureus* 20° C. or 37° C. as indicated. (Note: Undiluted and diluted with equal parts water or diluted with sufficient water to form a thick paste or heavy emulsion.)

<sup>5</sup> The authors are indebted to L. C. Himebaugh for this method.

<sup>6</sup> In the cases where chlorine compounds are used for this purpose the effectiveness is usually judged on the basis of "available" chlorine content.

<sup>7</sup> Intestinal antiseptics do not readily lend themselves to laboratory tests. When medical opinion concerning the physiological and therapeutic properties of such preparations is to be confirmed by the results of bacteriological tests, the products may be considered to be germicidal only when tested in the presence of liberal amounts of organic matter, such as saliva, feces, etc.



Disinfectants and antiseptics for use in the absence of organic matter:

A. Preparations for drinking water.<sup>6</sup>

Phenol coefficient technique—*E. typhi* 20° C. (Note: 0.1 c. c. of culture to 10 c. c. of diluted preparation.)

Intestinal antiseptics.<sup>7</sup>

### Figures Useful in Making Dilutions in Testing Disinfectants (11)

(5 c. c. of disinfectant+95 c. c. of distilled water=solution A)

Dilution	Solution A C. c.	Distilled water C. c.	Solution A C. c.	Distilled water C. c.	Solution A C. c.	Distilled water C. c.
1:20	= 20	+ 0	or 10	+ 0	or 4	+ 0
1:25	= 20	+ 5	or 10	+ 2½	or 4	+ 1
1:30	= 20	+ 10	or 10	+ 5	or 4	+ 2
1:35	= 20	+ 15	or 10	+ 7½	or 4	+ 3
1:40	= 20	+ 20	or 10	+ 10	or 4	+ 4
1:45	= 20	+ 25	or 10	+ 12½	or 4	+ 5
1:50	= 20	+ 30	or 10	+ 15	or 4	+ 6
1:55	= 20	+ 35	or 10	+ 17½	or 4	+ 7
1:60	= 20	+ 40	or 10	+ 20	or 4	+ 8
1:65	= 20	+ 45	or 10	+ 22½	or 4	+ 9
1:70	= 20	+ 50	or 10	+ 25	or 4	+ 10
1:80	= 20	+ 60	or 10	+ 30	or 4	+ 12
1:90	= 20	+ 70	or 10	+ 35	or 4	+ 14
1:100	= 20	+ 80	or 10	+ 40	or 4	+ 16
1:110	= 20	+ 90	or 10	+ 45	or 4	+ 18
1:120	= 20	+ 100	or 10	+ 50	or 4	+ 20
1:130	= 20	+ 110	or 10	+ 55	or 4	+ 22
1:140	= 20	+ 120	or 10	+ 60	or 4	+ 24
1:150	= 20	+ 130	or 10	+ 65	or 4	+ 26
1:160	= 20	+ 140	or 10	+ 70	or 4	+ 28
1:170	= 20	+ 150	or 10	+ 75	or 4	+ 30
1:180	= 20	+ 160	or 10	+ 80	or 4	+ 32
1:200	= 20	+ 180	or 10	+ 90	or 4	+ 36
1:200	= 20	+ 180	or 4	+ 36	or 2	+ 18
1:225	= 20	+ 205	or 4	+ 41	or 2	+ 20½
1:250	= 20	+ 230	or 4	+ 46	or 2	+ 23
1:275	= 20	+ 255	or 4	+ 51	or 2	+ 25½
1:300	= 20	+ 280	or 4	+ 56	or 2	+ 28
1:325	= 20	+ 305	or 4	+ 61	or 2	+ 30½
1:350	= 20	+ 330	or 4	+ 66	or 2	+ 33
1:375	= 20	+ 355	or 4	+ 71	or 2	+ 35½
1:400	= 20	+ 380	or 4	+ 76	or 2	+ 38
1:450	= 20	+ 430	or 4	+ 86	or 2	+ 43
1:500	= 20	+ 480	or 4	+ 96	or 2	+ 48

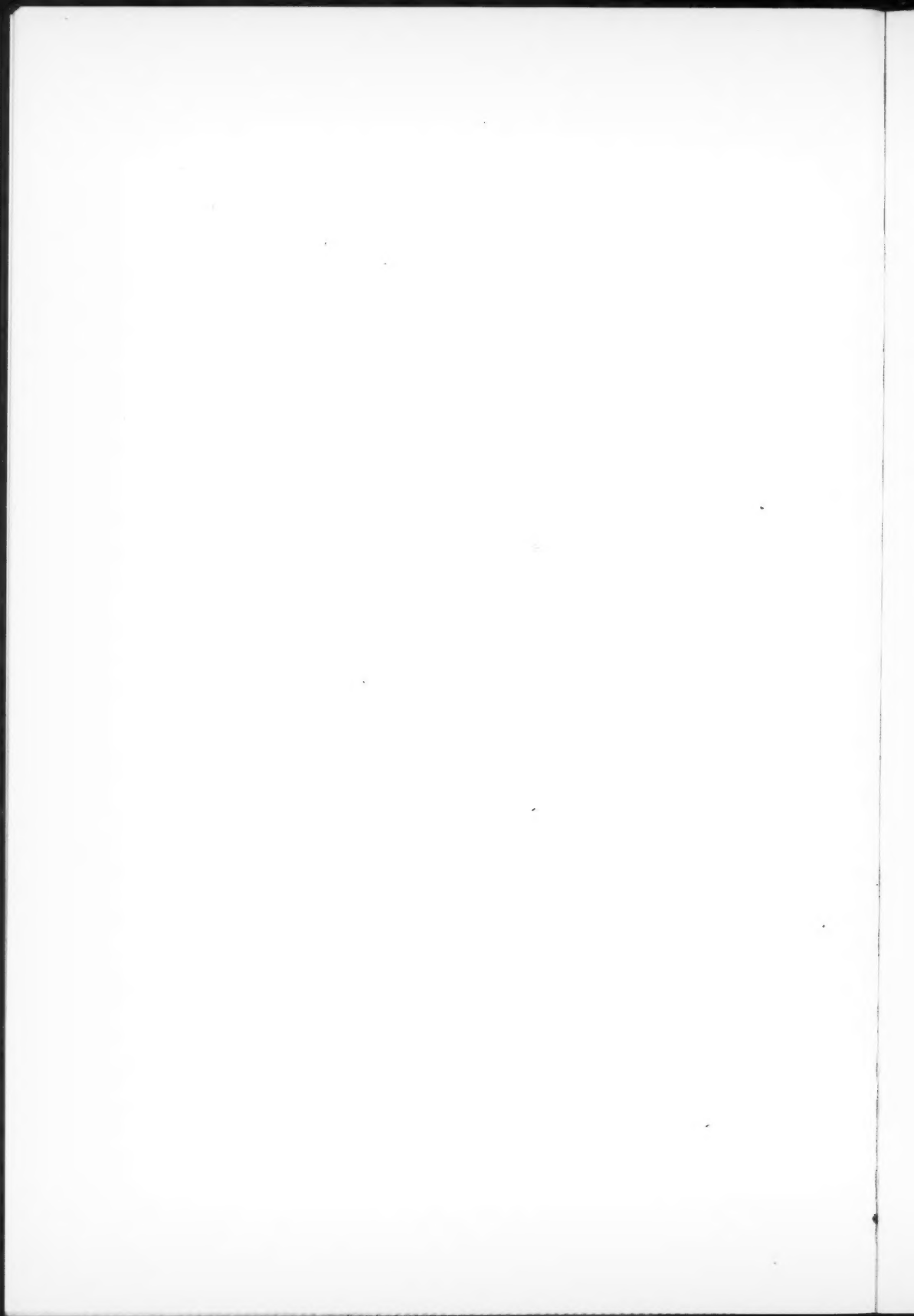
(1 c. c. of disinfectant+99 c. c. of distilled water=solution B)

Dilution	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.
1:100	= 100	+ 0	or 10	+ 0	or	
1:110	= 100	+ 10	or 10	+ 1	or	
1:120	= 100	+ 20	or 10	+ 2	or	
1:130	= 100	+ 30	or 10	+ 3	or	
1:140	= 100	+ 40	or 10	+ 4	or	
1:150	= 100	+ 50	or 10	+ 5	or	
1:160	= 100	+ 60	or 10	+ 6	or	
1:180	= 100	+ 80	or 10	+ 8	or	
1:200	= 100	+ 100	or 10	+ 10	or 4	+ 4
1:225	= 100	+ 125	or 10	+ 12½	or 4	+ 5
1:250	= 100	+ 150	or 10	+ 15	or 4	+ 6
1:275	= 100	+ 175	or 10	+ 17½	or 4	+ 7
1:300	= 100	+ 200	or 10	+ 20	or 4	+ 8
1:325	= 100	+ 225	or 10	+ 22½	or 4	+ 9

Dilution	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.	Solution B C. c.	Distilled water C. c.
1:350	= 100	+ 250	or 10	+ 25	or 4	+ 10
1:375	= 100	+ 275	or 10	+ 27½	or 4	+ 11
1:400	= 100	+ 300	or 10	+ 30	or 4	+ 12
1:400	= 10	+ 30	or 4	+ 12	or 2	+ 6
1:450	= 10	+ 35	or 4	+ 14	or 2	+ 7
1:500	= 10	+ 40	or 4	+ 16	or 2	+ 8
1:550	= 10	+ 45	or 4	+ 18	or 2	+ 9
1:600	= 10	+ 50	or 4	+ 20	or 2	+ 10
1:650	= 10	+ 55	or 4	+ 22	or 2	+ 11
1:700	= 10	+ 60	or 4	+ 24	or 2	+ 12
1:750	= 10	+ 65	or 4	+ 26	or 2	+ 13
1:800	= 10	+ 70	or 4	+ 28	or 2	+ 14
1:850	= 10	+ 75	or 4	+ 30	or 2	+ 15
1:900	= 10	+ 80	or 4	+ 32	or 2	+ 16
1:900	= 5	+ 40	or 4	+ 32	or 2	+ 16
1:1,000	= 5	+ 45	or 4	+ 36	or 2	+ 18
1:1,100	= 5	+ 50	or 4	+ 40	or 2	+ 20
1:1,200	= 5	+ 55	or 4	+ 44	or 2	+ 22
1:1,300	= 5	+ 60	or 4	+ 48	or 2	+ 24
1:1,400	= 5	+ 65	or 4	+ 52	or 2	+ 26
1:1,500	= 5	+ 70	or 4	+ 56	or 2	+ 28
1:1,600	= 5	+ 75	or 4	+ 60	or 2	+ 30
1:1,700	= 5	+ 80	or 4	+ 64	or 2	+ 32
1:1,800	= 5	+ 85	or 4	+ 68	or 2	+ 34
1:2,000	= 5	+ 95	or 4	+ 76	or 2	+ 38
1:2,200	= 5	+ 105	or 4	+ 84	or 2	+ 42
1:2,400	= 5	+ 115	or 4	+ 92	or 2	+ 46
1:2,600	= 5	+ 125	or 4	+ 100	or 2	+ 50
1:2,800	= 5	+ 135	or 4	+ 108	or 2	+ 54
1:3,000	= 5	+ 145	or 4	+ 116	or 2	+ 58
1:3,200	= 5	+ 155	or 4	+ 124	or 2	+ 62

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